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UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

June 2001

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

Dr. B. Macpherson
Mesoscale Data Assimilation and Observational Monitoring
Meteorological Office
London Road
Bracknell
Berkshire
United Kingdom
RG12 2SZ

2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1A, 1B, 2A and 2B contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.

TABLE 1A

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias| ≥ 4 hPa (pressure),
≥ 5 m s^{-1} (wind speed),
≥ 30 degrees (direction).

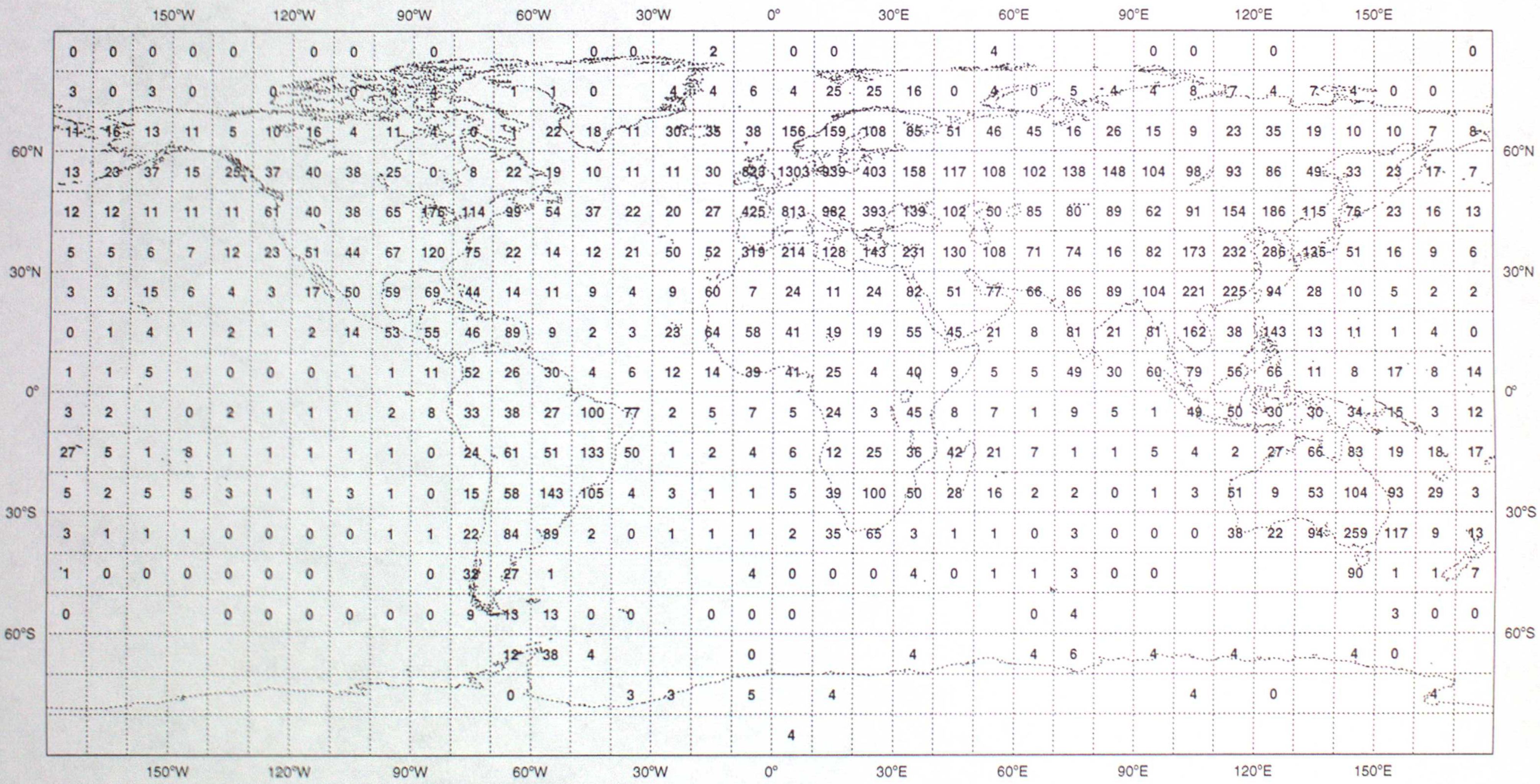
2.SD ≥ 6 hPa (pressure),
≥ 80 degrees (direction).

3.PGE ≥ 25

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
AVOSTEST	ALL	P	SUR	55	15	27	4.5	-5.9	7.4
CGDS	ALL	P	SUR	43	43	100			
C6PZ3	ALL	P	SUR	34	0	0	0.8	8.2	8.3
DGSR	ALL	P	SUR	31	0	0	1.6	-5.6	5.8
ELAQ5	ALL	P	SUR	41	0	0	1.0	4.9	5.0
ELJL8	ALL	P	SUR	46	3	7	1.1	6.7	6.8
ELVY8	ALL	P	SUR	25	0	0	1.4	-4.7	4.9
ELWR	ALL	P	SUR	46	0	0	1.0	-9.0	9.0
H3EP	ALL	P	SUR	31	0	0	1.1	-7.2	7.2
KHRP	ALL	P	SUR	34	0	0	2.1	5.9	6.3
OXIF2	ALL	P	SUR	64	0	0	0.9	-4.1	4.2
PCAG	ALL	P	SUR	65	0	0	0.9	-4.5	4.6
P3NB5	ALL	P	SUR	67	0	0	1.4	-4.0	4.3
SK000	ALL	P	SUR	58	0	0	1.8	-5.2	5.5
UAIS	ALL	P	SUR	26	1	4	5.1	-7.2	8.8
UBDL	ALL	P	SUR	21	2	10	6.9	-2.0	7.2
UCAC	ALL	P	SUR	46	0	0	1.6	4.8	5.1
UCJL	ALL	P	SUR	29	0	0	1.8	4.9	5.2
UDYG	ALL	P	SUR	23	0	0	3.1	4.5	5.5
UIDS	ALL	P	SUR	23	4	17	1.8	12.8	12.9
VCJM	ALL	P	SUR	32	32	100			
VCRT	ALL	P	SUR	27	0	0	1.5	-4.6	4.8
VTST	ALL	P	SUR	26	0	0	1.4	8.2	8.3
WCV7620	ALL	P	SUR	25	0	0	1.0	4.0	4.1
WCX8884	ALL	P	SUR	26	0	0	3.1	5.7	6.4
XXBA	ALL	P	SUR	27	1	4	1.2	-4.0	4.1
3FRT5	ALL	P	SUR	20	0	0	0.5	4.2	4.3
3FWP3	ALL	P	SUR	28	0	0	1.3	4.3	4.5
4XGV	ALL	P	SUR	24	0	0	1.1	5.7	5.8
62151	ALL	P	SUR	26	0	0	0.6	7.8	7.9
WIND SPEED									
DMRX	ALL	SPEED	SUR	53	2	4	5.0	5.8	7.6
ELUT5	ALL	SPEED	SUR	44	0	0	2.7	5.0	5.6
ELWP8	ALL	SPEED	SUR	25	0	0	4.8	8.4	9.7
ELXT8	ALL	SPEED	SUR	44	2	5	6.4	12.5	14.0
FKWK	ALL	SPEED	SUR	53	36	68	5.6	6.4	8.5
MXAR9	ALL	SPEED	SUR	38	0	0	7.6	10.0	12.6
OYCZ	ALL	SPEED	SUR	53	1	2	6.4	7.9	10.2
OYVQ2	ALL	SPEED	SUR	52	1	2	5.9	5.8	8.3
PJIB	ALL	SPEED	SUR	29	0	0	5.6	9.8	11.3
PPSO	ALL	SPEED	SUR	33	0	0	4.8	8.6	9.9
SFRZ	ALL	SPEED	SUR	48	1	2	6.4	8.5	10.7
SXYY	ALL	SPEED	SUR	42	0	0	4.9	7.5	8.9
UIDS	ALL	SPEED	SUR	22	6	27	7.8	3.4	8.5
3EMA9	ALL	SPEED	SUR	23	0	0	4.4	5.4	7.0
3ESP7	ALL	SPEED	SUR	71	0	0	4.6	9.8	10.8
WIND DIRECTION									
BBXX SK0	ALL	DIRN.	SUR	28	2	7	71.2	52.8	88.7
DGNB	ALL	DIRN.	SUR	330	0	0	94.1	19.9	96.2
ELXV3	ALL	DIRN.	SUR	21	1	5	75.3	-54.5	92.9
FKWK	ALL	DIRN.	SUR	39	36	92	7.2	36.9	37.6
FPSS	ALL	DIRN.	SUR	50	2	4	94.3	5.5	94.5
OVZB2	ALL	DIRN.	SUR	27	2	7	67.7	32.9	75.3
51007	ALL	DIRN.	SUR	42	0	0	32.2	33.7	46.7
52316	ALL	DIRN.	SUR	28	0	0	132.8	-30.4	136.2

Figure 1. SHIP/SYNOP mean daily count. JUNE 2001
Main hours only
Global average number of observations in 24 hours = 21114



0	0	0	0	0		0	0		0				0	0		2		0	0				4				0	0		0					0
3	0	3	0		0		0	4	4		1	1	0		4	4	6	4	25	25	16	0	4	0	5	4	4	8	7	4	7	4	0	0	
14	16	13	11	5	10	16	4	11	4	0	1	22	18	11	30	35	38	156	159	108	85	51	46	45	16	26	15	9	23	35	19	10	10	7	8
13	23	37	15	25	37	40	38	25	0	8	22	19	10	11	11	30	823	1303	939	403	158	117	108	102	138	148	104	98	93	86	49	33	23	17	7
12	12	11	11	11	61	40	38	65	176	114	99	54	37	22	20	27	425	813	982	393	139	102	50	85	80	89	62	91	154	186	115	76	23	16	13
5	5	6	7	12	23	51	44	67	120	75	22	14	12	21	50	52	319	214	128	143	231	130	108	71	74	16	82	173	232	286	135	51	16	9	6
3	3	15	6	4	3	17	50	59	69	44	14	11	9	4	9	60	7	24	11	24	82	51	77	66	86	89	104	221	225	94	28	10	5	2	2
0	1	4	1	2	1	2	14	53	55	46	89	9	2	3	23	64	58	41	19	19	55	45	21	8	81	21	81	162	38	143	13	11	1	4	0
1	1	5	1	0	0	0	1	1	11	52	26	30	4	6	12	14	39	41	25	4	40	9	5	5	49	30	60	79	56	66	11	8	17	8	14
3	2	1	0	2	1	1	1	2	8	33	38	27	100	77	2	5	7	5	24	3	45	8	7	1	9	5	1	49	50	30	30	34	15	3	12
27	5	1	8	1	1	1	1	1	0	24	61	51	133	50	1	2	4	6	12	25	36	42	21	7	1	1	5	4	2	27	66	83	19	18	17
5	2	5	5	3	1	1	3	1	0	15	58	143	105	4	3	1	1	5	39	100	50	28	16	2	2	0	1	3	51	9	53	104	93	29	3
3	1	1	1	0	0	0	0	1	1	22	84	89	2	0	1	1	1	2	35	65	3	1	1	0	3	0	0	0	38	22	94	259	117	9	13
1	0	0	0	0	0	0			0	32	27	1					4	0	0	0	4	0	1	1	3	0	0					90	1	1	7
0				0	0	0	0	0	0	9	13	13	0	0		0	0	0						0	4								3	0	0
											12	38	4				0				4			4	6		4		4			4	0		
											0			3	3		5		4									4		0				4	
																		4																	

TABLE 1B

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for ships, fixed buoys and platforms.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Element monitored		:Sea temperature (Degrees C).
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:10 degrees	
SELECTION CRITERIA	:NOBS	≥ 20 , and one or more of the following:
	1.|bias|	≥ 3 degrees
	2.SD	≥ 5 degrees
	3.PGE	≥ 25

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
BBXX SK0	ALL	TS	SUR	92	49	53	0.9	-0.5	1.0
CGDS	ALL	TS	SUR	145	0	0	1.3	3.7	4.0
CG2248	ALL	TS	SUR	49	49	100			
CG2960	ALL	TS	SUR	53	2	4	2.4	5.3	5.8
C6FD8	ALL	TS	SUR	52	0	0	0.9	-4.2	4.2
C6MS4	ALL	TS	SUR	30	0	0	1.2	-3.1	3.3
C6OQ8	ALL	TS	SUR	26	0	0	1.1	4.2	4.3
ELJL8	ALL	TS	SUR	45	13	29	1.9	6.2	6.5
ELXT8	ALL	TS	SUR	44	0	0	0.6	-4.3	4.3
ELXX6	ALL	TS	SUR	30	2	7	3.1	-3.1	4.3
KRPB	ALL	TS	SUR	44	0	0	1.0	-4.9	5.0
MVXQ8	ALL	TS	SUR	21	0	0	1.1	-4.1	4.3
MWBI9	ALL	TS	SUR	41	1	2	1.5	6.1	6.3
MZGK7	ALL	TS	SUR	40	1	2	2.6	-4.1	4.8
OUGY	ALL	TS	SUR	37	11	30	2.7	4.1	4.9
PDYI	ALL	TS	SUR	43	0	0	1.3	-3.2	3.4
PPSV	ALL	TS	SUR	28	0	0	0.9	-6.3	6.4
SFRZ	ALL	TS	SUR	44	15	34	0.8	1.7	1.9
TSMS	ALL	TS	SUR	85	0	0	1.4	-4.3	4.5
UAIS	ALL	TS	SUR	24	0	0	2.3	-4.3	4.9
UCPE	ALL	TS	SUR	28	14	50	3.8	-1.4	4.0
UCUP	ALL	TS	SUR	21	1	5	1.8	-3.5	4.0
VCDT	ALL	TS	SUR	21	9	43	1.8	1.6	2.4
VGLZ	ALL	TS	SUR	25	24	96	0.0	2.4	2.4
VODB	ALL	TS	SUR	20	5	25	2.8	0.2	2.8
V7AT5	ALL	TS	SUR	21	6	29	1.6	-6.9	7.1
WBHU	ALL	TS	SUR	22	0	0	1.3	3.2	3.4
WUW2120	ALL	TS	SUR	44	15	34	2.1	1.7	2.7
WZJD	ALL	TS	SUR	37	0	0	0.5	-3.2	3.2
ZCBJ6	ALL	TS	SUR	40	0	0	2.0	-3.0	3.6
3ECM7	ALL	TS	SUR	70	0	0	0.7	4.0	4.0
3FDV6	ALL	TS	SUR	22	0	0	1.1	3.2	3.4
45145	ALL	TS	SUR	160	159	99	0.0	2.3	2.3
45147	ALL	TS	SUR	646	646	100			
45148	ALL	TS	SUR	508	508	100			
45151	ALL	TS	SUR	498	10	2	1.5	5.2	5.4
45152	ALL	TS	SUR	646	646	100			
45154	ALL	TS	SUR	516	26	5	2.0	6.7	7.0
46131	ALL	TS	SUR	644	644	100			
46146	ALL	TS	SUR	643	643	100			
46181	ALL	TS	SUR	644	644	100			

TABLE 2A

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)
	:25 m s^{-1}	(vector wind)

SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
17535	43.6	1.4	ALL	P	SUR	20	20	100			
21604	38.3	-77.0	ALL	P	SUR	65	65	100			
31525	43.6	1.3	ALL	P	SUR	22	22	100			
41504	23.3	-65.6	ALL	P	SUR	213	123	58	3.8	-1.2	4.0
46561	29.5	-167.7	ALL	P	SUR	194	0	0	0.5	-4.9	4.9
56808	24.9	-80.9	ALL	P	SUR	78	78	100			
WIND SPEED											
17557	-32.6	85.9	ALL	SPEED	SUR	645	0	0	2.7	-6.4	6.9
41639	25.1	-64.3	ALL	SPEED	SUR	208	0	0	4.9	7.8	9.2
56513	-17.2	106.0	ALL	SPEED	SUR	24	0	0	2.4	-6.8	7.2
WIND DIRECTION											
23913	15.7	62.9	ALL	DIRN.	SUR	291	8	3	63.0	89.6	109.6
23948	14.8	64.1	ALL	DIRN.	SUR	114	0	0	2.9	148.0	148.0
41563	11.3	-30.3	ALL	DIRN.	SUR	345	0	0	25.4	36.1	44.2
52526	12.9	154.4	ALL	DIRN.	SUR	50	0	0	22.0	30.2	37.4
52529	7.8	143.5	ALL	DIRN.	SUR	35	2	6	40.3	-65.2	76.6

Figure 2. DRIFTER mean daily count. JUNE 2001
Main hours only
Global average number of observations in 24 hours = 8984

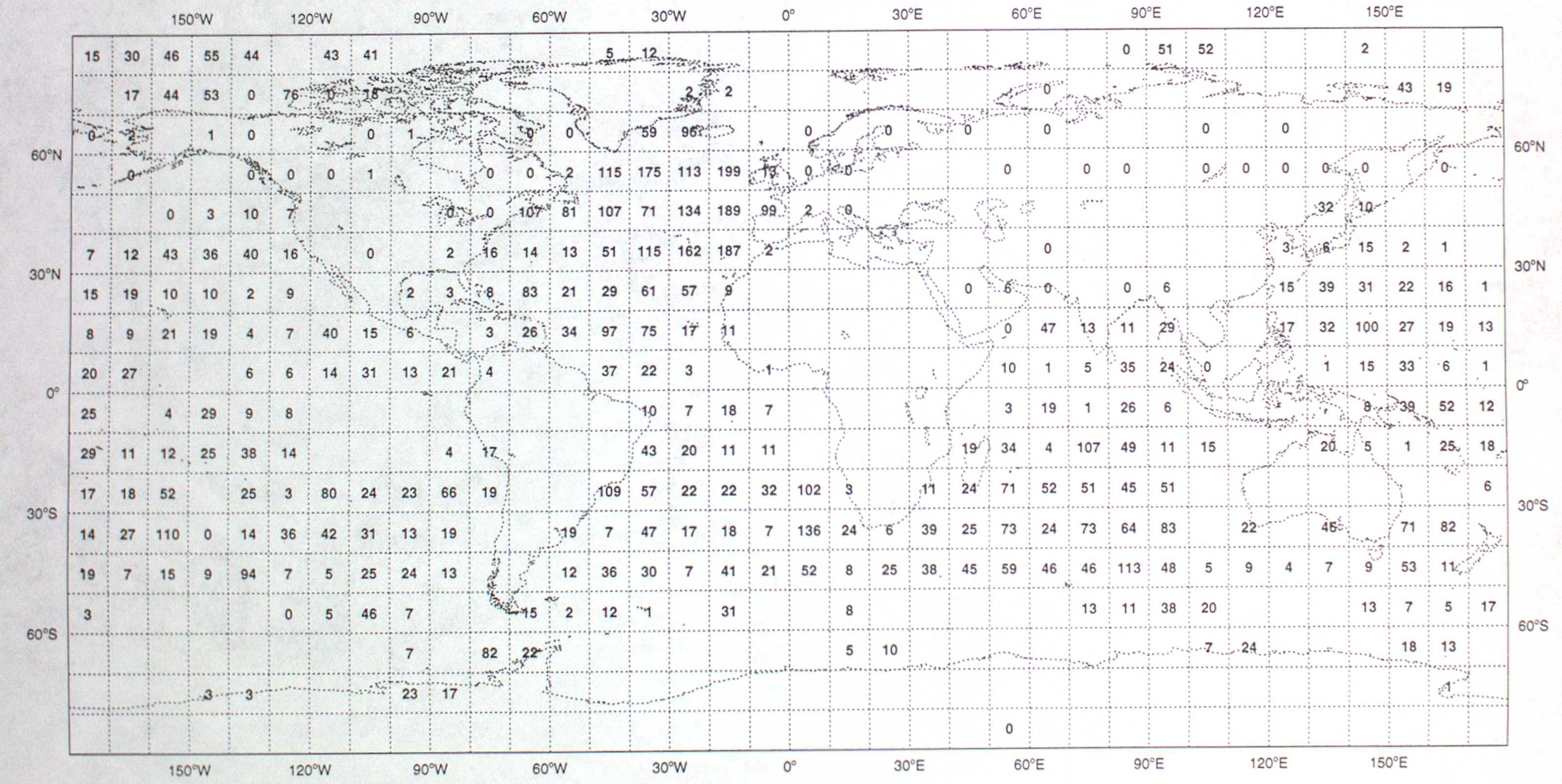

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
15 30 46 55 44 43 41 5 12 0 51 52 2
17 44 53 0 76 0 18 2 2 0 43 19
0 2 1 0 0 1 0 0 59 96 0 0 0 0 0 0
0 0 0 0 1 0 0 2 115 175 113 199 19 0 0 0 0 0 0 0 0 0 0 0
0 3 10 7 0 0 107 81 107 71 134 189 99 2 0 32 10
7 12 43 36 40 16 0 2 16 14 13 51 115 162 187 2 0 3 6 15 2 1
15 19 10 10 2 9 2 3 8 83 21 29 61 57 9 0 6 0 0 6 15 39 31 22 16 1
8 9 21 19 4 7 40 15 6 3 26 34 97 75 17 11 0 47 13 11 29 17 32 100 27 19 13
20 27 6 6 14 31 13 21 4 37 22 3 1 10 1 5 35 24 0 1 15 33 6 1
25 4 29 9 8 10 7 18 7 3 19 1 26 6 8 39 52 12
29 11 12 25 38 14 4 17 43 20 11 11 19 34 4 107 49 11 15 20 5 1 25 18
17 18 52 25 3 80 24 23 66 19 109 57 22 22 32 102 3 11 24 71 52 51 45 51 6
14 27 110 0 14 36 42 31 13 19 19 7 47 17 18 7 136 24 6 39 25 73 24 73 64 83 22 46 71 82
19 7 15 9 94 7 5 25 24 13 12 36 30 7 41 21 52 8 25 38 45 59 46 46 113 48 5 9 4 7 9 53 11
3 0 5 46 7 15 2 12 1 31 8 13 11 38 20 13 7 5 17
7 82 22 5 10 7 24 18 13
3 3 23 17 1
0

TABLE 2B

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Element monitored		:Sea temperature (Degrees C).
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:10 degrees	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:
	1.|bias|	≥ 3 degrees
	2.SD	≥ 5 degrees
	3.PGE	≥ 25.

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
15501	-10.1	-36.2	ALL	TS	SUR	97	65	67	0.1	-9.7	9.7
17535	43.6	1.4	ALL	TS	SUR	27	27	100			
17635	-30.4	-15.1	ALL	TS	SUR	274	274	100			
21604	38.3	-77.0	ALL	TS	SUR	50	50	100			
21904	43.4	140.9	ALL	TS	SUR	304	0	0	1.0	4.3	4.4
22913	40.9	131.9	ALL	TS	SUR	286	0	0	1.2	3.8	4.0
23901	4.1	96.1	ALL	TS	SUR	136	0	0	3.5	-3.0	4.6
23902	0.7	56.6	ALL	TS	SUR	182	0	0	2.2	4.6	5.1
25539	80.5	105.2	ALL	TS	SUR	563	15	3	2.5	3.6	4.4
25540	81.3	102.3	ALL	TS	SUR	520	7	1	2.0	3.0	3.6
25541	82.0	99.1	ALL	TS	SUR	575	11	2	2.4	3.7	4.4
26511	82.3	94.3	ALL	TS	SUR	569	35	6	2.4	4.1	4.8
33502	-23.4	-12.3	ALL	TS	SUR	96	0	0	0.2	4.3	4.3
33560	-40.3	74.4	ALL	TS	SUR	646	645	100			
43508	12.7	-115.4	ALL	TS	SUR	204	204	100			
43904	36.6	-34.5	ALL	TS	SUR	210	74	35	1.8	0.3	1.8
43912	13.6	-99.1	ALL	TS	SUR	207	60	29	0.5	-0.5	0.7
44624	43.3	-42.3	ALL	TS	SUR	1069	0	0	0.9	-3.9	4.0
46736	32.4	-164.2	ALL	TS	SUR	69	0	0	0.5	4.2	4.3
46969	43.3	-124.3	ALL	TS	SUR	199	119	60	1.7	7.8	7.9
51527	-3.5	153.2	ALL	TS	SUR	181	181	100			
51566	56.4	-107.6	ALL	TS	SUR	40	40	100			
52618	-2.7	141.3	ALL	TS	SUR	183	0	0	2.4	-3.3	4.1
52668	-3.7	152.4	ALL	TS	SUR	171	0	0	4.5	-3.3	5.6
53517	-13.8	82.1	ALL	TS	SUR	620	0	0	1.2	8.3	8.4
55912	-37.9	166.5	ALL	TS	SUR	554	1	0	1.5	3.9	4.2
61589	41.7	134.1	ALL	TS	SUR	263	136	52	6.0	-0.2	6.0
62843	47.3	-16.9	ALL	TS	SUR	435	292	67	6.9	-2.3	7.3
62844	44.4	-25.6	ALL	TS	SUR	397	249	63	6.4	1.7	6.6

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60010	28.3N	16.5W	2367	S7	70	0	0	0	1.4	-4.3	4.5
60437	36.3N	2.8E	981	S8	72	0	0	100	0.9	-6.9	7.0
60476	35.4N	7.2E	1116	S8	74	8	11	100	0.7	13.5	13.5
61235	15.1N	10.6W	100	MS	20	6	30	0	1.6	2.0	2.6
62056	32.8N	21.8E	625	S8	106	0	0	1	0.8	-5.8	5.9
62790	12.1N	24.9E	674	MS	88	8	9	5	1.7	4.4	4.7
63334	10.3N	37.7E	2515	MS	26	0	0	0	1.4	9.1	9.2
63402	7.7N	36.8E	1725	MS	27	0	0	0	1.0	6.1	6.2
63453	8.9N	39.9E	930	S	26	1	4	0	2.2	-4.1	4.7
63471	9.6N	41.9E	1260	MS	26	0	0	0	1.3	8.3	8.4
63602	3.1N	30.9E	1204	S	58	58	100	0			
63801	4.9S	29.6E	882	S8	32	0	0	38	0.9	7.4	7.5
68030	18.5S	25.6E	1071	8	82	0	0	1	1.4	4.5	4.7
68038	20.5S	26.0E	903	8	81	0	0	0	1.2	4.0	4.2
68338	26.9S	24.6E	1234	S8	64	64	100	0			
68396	26.5S	31.3E	641	S8	54	0	0	0	0.9	4.8	4.9
68575	30.0S	30.0E	1175	S8	111	111	100	0			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30554	54.5N	113.6E	995	MS	118	1	1	0	4.8	5.0	6.9
30967	49.9N	115.8E	623	MS	88	1	1	0	1.1	-5.4	5.5
38954	37.5N	71.5E	2077	8	51	5	10	0	3.0	-4.2	5.2
40726	36.8N	45.7E	1384	MS	88	2	2	2	1.2	4.0	4.2
41254	23.1N	57.7E	1755	S8	44	44	100	0			
41396	16.0N	48.9E	700	MS	60	0	0	0	0.7	6.5	6.5
41466	13.7N	44.1E	1402	8	53	0	0	0	0.6	-6.2	6.2
41515	35.6N	71.8E	1464	8	43	1	2	26	1.4	-4.3	4.5
41696	29.0N	66.6E	2015	S	81	30	37	0	2.9	1.1	3.1
44416	28.6N	81.6E	720	MS	51	0	0	0	1.1	4.5	4.6
47022	40.8N	128.2E	1200	S	95	1	1	2	1.3	5.0	5.2
51495	43.5N	91.6E	874	M	117	0	0	0	1.1	5.6	5.7
52602	38.8N	93.4E	2734	S	118	0	0	0	1.0	-5.5	5.6
52955	35.6N	100.8E	3201	S	118	1	1	0	0.7	13.0	13.0
56144	31.8N	98.6E	3184	S	118	0	0	1	1.0	-4.0	4.1
56146	31.6N	100.0E	339	S	118	118	100	0			
56444	28.5N	98.9E	3488	S	118	1	1	0	0.7	13.2	13.2
56462	29.0N	101.5E	2994	S	118	0	0	0	1.2	8.7	8.8

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	43	0	0	0	1.1	-6.0	6.1
80410	10.1N	69.3W	613	MS	104	34	33	0	1.1	0.5	1.2
82353	3.2S	52.2W	74	M	47	0	0	43	1.0	-4.1	4.2
83214	10.3S	54.9W	285	MS	80	1	1	0	1.9	-9.2	9.4
83235	12.4S	46.4W	604	MS	88	1	1	0	0.7	5.7	5.7
83332	14.1S	46.4W	826	MS	88	3	3	0	0.9	13.4	13.4
83376	15.9S	49.0W	740	MS	87	0	0	0	0.5	-4.6	4.6
83408	14.3S	43.8W	447	MS	87	1	1	0	0.7	10.7	10.7
83488	17.8S	42.9W	1097	MS	87	87	100	0			
83531	18.6S	46.5W	940	MS	85	0	0	0	0.7	-7.7	7.7
83579	19.6S	46.9W	1004	MS	86	0	0	0	0.6	-4.6	4.6
83587	19.9S	43.9W	850	MS	87	0	0	1	0.9	-7.9	8.0
83773	23.1S	48.9W	793	MS	86	0	0	0	0.6	-11.2	11.2
83836	25.5S	50.6W	837	MS	88	0	0	0	0.7	-5.4	5.4
83953	30.9S	55.5W	231	MS	88	0	0	1	1.1	-11.4	11.5

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
84377	3.8S	73.3W	125	MS	98	0	0	0	0.9	4.4	4.5
84401	5.2S	80.6W	49	MS	101	0	0	0	0.9	5.1	5.2
84425	5.9S	76.1W	179	MS	21	0	0	0	0.9	4.3	4.4
84455	6.5S	76.4W	281	MS	72	0	0	6	1.0	4.4	4.5
84472	7.1S	78.5W	2620	S	48	0	0	0	0.8	-5.9	6.0
84474	7.2S	76.7W	350	S	23	1	4	4	1.4	10.7	10.8
84501	8.1S	79.0W	26	MS	74	0	0	0	0.7	4.0	4.1
84686	13.6S	72.0W	3248	S	103	0	0	0	0.8	-4.0	4.1
84688	13.7S	73.4W	3444	S	43	1	2	0	0.5	-12.5	12.5
84720	14.9S	75.0W	567	MS	50	0	0	0	0.6	4.7	4.7
84782	18.1S	70.3W	468	MS	79	0	0	0	1.3	9.0	9.1
85140	14.3S	67.4W	140	M	56	0	0	4	2.2	4.2	4.7
85264	18.5S	64.1W	1998	S	55	55	100	0			
85312	19.8S	63.9W	992	S	45	1	2	0	2.2	4.6	5.1
85406	18.3S	70.3W	55	M	116	0	0	0	0.9	5.2	5.3
85432	22.5S	68.9W	2320	S8	80	0	0	0	1.0	5.1	5.2

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71115	50.2N	119.3W	555	MS	117	0	0	78	0.7	7.8	7.8
72327	36.1N	86.7W	182	MS	116	0	0	0	0.7	4.2	4.3
76118	30.4N	109.7W	1040	MS	27	0	0	0	0.8	-10.3	10.3
76243	28.7N	100.5W	250	MS	70	0	0	1	1.5	6.1	6.3
76658	19.2N	103.7W	494	MS	23	0	0	0	0.8	5.5	5.6
76743	18.0N	92.9W	10	MS	71	0	0	0	1.0	6.5	6.6
76903	14.9N	92.3W	118	MS	77	0	0	1	1.0	6.1	6.2

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
92010	6.1S	145.4E	1587	M	51	0	0	0	0.7	10.1	10.1
92036	2.4S	147.4E	1	8	226	226	100	0			
94130	14.8S	131.9E	120	MS	116	0	0	0	1.0	5.6	5.7
94384	24.1S	151.9E	34	MS	112	0	0	0	0.5	4.5	4.5
97378	10.7S	123.1E	1	MS	34	33	97	0	0.0	-14.8	14.8

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
04416	72.6N	38.4W	3202	S	112	2	2	0	0.7	-5.3	5.3
06685	47.0N	9.1E	515	MS	118	0	0	0	1.1	6.3	6.4
10557	50.5N	11.1E	845	S8	354	354	100	0			
12140	54.4N	18.7E	2	MS	116	0	0	1	0.9	7.9	8.0
13269	44.3N	19.9E	176	MS	116	0	0	0	1.1	7.7	7.8
14554	44.9N	18.4E	140	S	50	1	2	0	1.1	-13.0	13.0
14650	43.8N	18.0E	972	S	54	53	98	0	0.0	-12.2	12.2
17092	39.8N	39.5E	1218	S8	118	0	0	0	1.5	7.4	7.6
17203	38.9N	40.5E	1177	S8	118	0	0	2	1.2	8.1	8.2

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	75	1	1	0	2.2	-7.9	8.2
89264	71.4S	68.9W	780	S	245	0	0	0	1.2	7.2	7.3
89272	74.8S	71.5W	1369	S	240	240	100	0			
89512	70.8S	11.8E	140	MS	116	0	0	0	2.2	-4.0	4.6
89612	66.3S	110.8E	390	S	249	195	78	0	2.3	-1.2	2.6

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89627	77.2S	123.5E	3084	S	366	104	28	0	0.5	-14.1	14.1
89637	69.9S	130.0E	2560	S	293	228	78	0	0.8	14.0	14.0
89661	73.1S	169.6E	200	S	82	0	0	0	2.1	7.2	7.5
89666	76.7S	163.0E	200	S	70	70	100	0			
89744	74.0S	43.0E	3353	S	256	0	0	0	0.9	7.1	7.2
89769	78.5S	168.4E	50	S	377	375	99	0	0.3	-14.3	14.3
89847	67.6S	146.0E	30	S	91	1	1	0	1.7	-8.9	9.1

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	32	0	66	1.5	0.8	32	0	66	0	4.3	0.8
AAH	1886	1	40	1.2	0.3	1878	0	40	0	5.8	0.8
AAL	6337	1	23	1.3	0.1	6304	0	23	0	6.6	0.6
AAR	1359	0	6	1.5	-0.5	1348	0	7	0	7.5	-0.1
ACA	4313	0	8	1.5	0.1	4314	0	8	0	6.7	0.5
ACI	59	0	42	1.0	0.2	61	0	43	0	7.1	0.7
AEA	927	0	4	1.6	0.3	903	0	5	0	8.7	0.6
AEL	450	0	5	1.4	-0.6	442	0	6	0	6.7	0.5
AFL	721	1	3	1.8	0.6	718	0	2	0	6.1	1.0
AFR	1729	1	6	1.6	0.3	1732	0	7	0	7.6	0.9
AIH	242	1	4	1.4	0.1	245	0	4	0	7.1	0.9
AJM	211	0	2	1.6	0.0	212	0	3	0	7.6	1.1
ALK	23	0	0	1.4	0.8	36	0	0	0	7.1	1.3
ALM	127	1	6	1.5	0.5	121	0	6	0	7.8	1.0
AMM	109	0	1	1.8	0.6	110	0	3	0	7.6	2.0
AMT	1472	1	43	1.6	0.4	1473	0	43	0	5.9	0.3
AMX	258	2	5	1.8	0.4	254	0	5	0	7.6	0.6
ANA	966	0	10	1.6	0.9	953	0	11	0	6.5	0.7
ANZ	5954	0	32	1.5	0.3	5930	0	32	0	7.5	0.8
ASY	36	8	47	2.7	1.9	34	0	44	0	7.3	1.0
AVA	407	1	3	1.8	0.7	409	0	4	0	7.4	0.4
AVE	207	0	3	1.9	1.0	207	1	69	0	10.2	2.0
AVN	142	3	51	1.0	0.4	142	0	50	0	7.0	0.4
AXF	43	0	26	1.2	0.4	44	0	25	0	4.8	1.8
AZA	715	1	8	2.7	0.8	708	0	5	0	7.8	0.8
BAF	22	9	14	1.0	-0.5	21	0	5	0	5.1	1.4
BAL	218	0	8	1.3	-0.4	215	0	11	0	9.4	1.1
BAW	1158	0	6	1.8	0.1	1153	0	7	0	6.0	0.8
BBB	43	0	5	2.0	0.7	42	0	2	0	4.0	-0.5
BLX	30	0	3	2.0	-0.2	30	0	0	0	4.7	0.1
BMA	26	0	0	1.2	0.4	25	0	0	0	3.1	0.7
BSK	32	3	6	1.7	0.3	33	0	6	0	10.4	-0.5
BWA	301	3	10	3.1	2.4	306	0	5	0	9.0	0.9
CAL	343	1	5	1.7	0.3	345	0	6	0	8.1	0.7
CCA	259	2	12	2.3	0.7	270	1	100	0	13.1	-0.7
CES	463	0	6	1.6	0.5	471	0	7	0	8.2	-0.4
CFC	41	0	2	2.2	1.2	42	0	7	0	10.0	2.0
CFG	773	0	2	1.6	-0.6	760	0	3	0	6.6	0.4
CLX	525	0	6	1.8	-0.1	531	0	7	0	7.1	0.6
CMI	212	0	3	2.4	0.7	202	0	1	0	8.5	2.2
CMM	669	0	7	1.6	0.1	664	0	7	0	6.0	0.9
COA	1485	1	32	1.5	0.2	1473	0	32	0	8.1	1.3
CPA	31	3	16	1.2	0.5	34	0	15	0	8.1	-0.8
CRL	523	0	4	2.0	0.9	520	0	3	0	6.2	0.7
CSN	117	2	7	1.8	0.7	119	1	8	0	7.6	1.8
CTB	67	0	0	1.4	0.5	66	0	3	0	7.2	0.8
CTM	28	0	11	2.2	-0.4	28	0	7	0	9.2	0.9
CUB	133	0	4	1.8	1.0	133	0	5	0	7.8	0.0
DAL	3536	1	39	1.5	-0.1	3551	0	39	0	6.9	0.6
DLH	2137	0	7	1.6	0.1	2098	0	7	0	7.4	0.8
EDW	55	0	0	1.9	-0.3	53	0	0	0	5.8	0.7
EEZ	33	0	100	1.9	0.4	33	0	3	0	7.6	2.5
EIA	211	0	45	1.8	-0.6	211	0	46	0	7.7	0.9
EIN	27	0	4	1.4	-0.5	28	0	4	0	4.9	0.7
ELY	88	0	2	1.5	0.0	86	0	2	0	7.0	1.1
ETH	34	0	6	1.3	-0.6	35	0	9	0	7.2	1.0
EVA	762	0	4	1.4	-0.2	766	0	7	0	8.6	-0.4
EWW	96	0	2	1.5	0.1	95	0	2	0	6.9	1.1
FDX	2020	1	41	1.5	0.5	2040	0	40	0	7.1	0.8

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FIN	417	0	3	1.7	0.5	409	0	3	0	5.9	0.7
FJI	781	0	47	1.3	0.5	757	0	48	0	9.5	0.6
FOM	602	1	32	1.4	-0.2	599	0	31	0	5.4	0.8
FWQ	37	0	51	0.9	0.1	37	0	51	0	4.1	0.9
GAF	78	0	5	1.2	-0.5	77	0	6	0	8.0	0.9
GCO	206	1	16	1.7	0.5	208	0	100	0	13.0	3.0
GHA	99	0	6	1.9	-0.5	99	4	10	0	10.3	2.1
GIA	24	4	21	1.9	0.7	27	0	19	0	5.4	1.2
GRL	35	0	3	2.3	0.0	35	0	0	0	5.1	0.1
GTI	164	2	9	2.0	-0.6	180	0	7	0	7.5	0.3
HAL	4250	0	36	1.4	0.2	4185	0	37	0	8.5	1.5
HLN	40	0	5	0.9	0.3	39	0	5	0	5.6	1.0
HVN	75	0	4	1.6	0.9	72	0	4	0	5.2	0.6
HZM	23	0	35	6.4	6.3	24	0	17	0	11.1	-0.1
IBE	3298	1	5	1.5	0.5	3210	0	5	0	7.2	0.5
ICE	1033	0	3	1.4	0.2	1011	0	4	0	6.6	1.0
ICL	20	0	0	1.2	0.5	22	0	5	0	8.6	0.8
IWD	169	2	7	1.2	-0.3	168	0	7	0	9.7	0.5
JAA	49	0	2	2.1	1.5	49	0	0	0	5.7	2.0
JAL	5376	0	4	1.5	0.2	5332	0	5	0	7.3	0.4
JAZ	1170	0	5	1.8	1.2	1154	0	5	0	7.9	0.5
JKK	458	0	9	1.8	-0.2	413	0	10	0	9.5	0.6
JMC	143	0	5	1.2	-0.2	142	1	7	0	6.8	0.4
KAL	3032	1	7	1.6	0.2	3033	0	8	0	7.4	0.4
KIW	21	5	48	1.8	1.2	21	0	52	0	13.1	1.0
KLM	2458	0	7	1.6	0.3	2435	0	8	0	6.5	0.6
LAN	91	4	20	2.9	0.4	97	0	18	0	13.4	3.1
LAP	81	5	48	2.0	0.6	81	0	47	0	10.0	-1.2
LDA	46	4	4	1.1	-0.3	46	2	2	0	5.6	1.0
LDI	427	0	4	1.3	-0.5	427	0	4	0	6.7	0.8
LIB	964	1	9	1.9	0.8	970	0	8	0	6.6	0.4
LOB	24	0	25	3.4	-2.2	29	0	21	0	9.2	1.3
LOT	193	0	3	1.8	-1.0	190	1	4	0	6.7	0.1
LTU	854	0	4	1.5	0.0	852	0	5	0	6.5	0.9
LXR	32	0	13	2.3	1.5	32	3	22	0	11.4	2.1
MAS	496	1	8	1.8	0.5	507	0	7	0	7.5	-0.2
MAU	30	0	7	2.0	0.3	30	0	13	0	13.2	2.2
MMZ	40	0	0	2.1	1.4	42	2	5	0	6.9	-0.1
MON	84	0	2	1.8	0.4	82	0	1	0	6.3	0.7
MPD	338	1	5	1.5	-0.2	333	0	5	0	8.1	1.2
MPH	558	0	3	1.6	-0.8	552	0	3	0	7.5	0.5
NCA	822	1	3	1.9	0.0	805	0	3	0	7.9	0.7
NWA	10907	0	7	1.6	0.5	10891	0	8	0	7.3	0.4
NZL	1881	0	8	1.3	-0.3	1881	0	8	0	5.4	0.7
OAE	504	0	43	1.5	0.2	503	0	43	0	7.6	0.6
PAC	383	1	26	1.5	0.5	384	0	28	0	6.8	0.3
PAL	1530	0	10	1.4	0.2	1442	0	10	0	7.5	0.3
PAO	397	0	56	1.5	0.4	390	0	57	0	11.4	-0.2
PIC	81	0	0	1.0	0.6	81	0	0	0	5.1	-0.5
PUA	43	0	35	3.4	0.9	43	0	44	0	18.9	5.7
QFA	4635	0	65	1.5	0.4	4624	0	65	0	6.8	0.5
RAM	95	0	8	2.1	0.3	95	1	11	0	9.3	1.4
RCH	409	2	38	3.0	-0.3	407	0	100	0	10.7	1.6
RKA	96	1	3	1.0	-0.4	96	0	5	0	6.8	1.3
RRR	75	3	7	1.5	0.4	74	0	8	0	8.6	1.2
RSL	20	5	15	0.9	0.0	20	0	10	0	7.3	-0.1
RYN	511	2	43	1.9	0.8	509	0	41	0	5.5	0.4
RZO	327	1	4	1.8	-0.4	323	0	3	0	8.8	0.3
SAA	501	1	3	1.5	0.1	499	0	2	0	5.7	0.3

	TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SAS	50	0	10	2.0	0.5	51	0	10	0	4.5	0.6
SIA	512	0	2	1.6	0.5	525	0	2	0	6.2	0.5
SLR	110	0	5	1.5	0.6	109	1	9	0	7.7	0.4
SOL	42	0	0	1.4	0.8	41	0	0	0	7.0	1.4
SSV	35	0	6	2.0	0.9	35	0	6	0	6.3	0.7
SVA	56	0	14	1.6	0.6	58	0	14	0	6.7	1.3
SWR	35	0	9	1.3	-0.3	35	0	17	0	11.4	4.3
TAG	22	0	23	2.2	0.5	22	0	27	0	7.2	0.7
TAM	108	3	25	1.9	0.7	108	1	30	0	14.3	2.4
TAP	963	1	4	1.5	-0.3	956	0	5	0	8.3	0.5
TBA	23	0	30	2.4	1.8	22	0	36	0	8.5	2.2
THA	237	0	6	1.4	-0.2	241	1	10	0	8.0	0.1
THT	105	1	35	3.2	2.0	103	1	27	0	6.3	0.8
TPA	25	0	0	1.7	0.6	25	0	0	0	4.7	0.0
TSC	247	1	4	1.6	0.3	255	0	6	0	6.6	1.3
TWA	1438	0	30	1.2	0.2	1416	0	31	0	5.9	0.7
UAL	147297	0	100	1.0	-0.1	147213	0	100	0	5.0	0.4
UPS	1810	0	45	1.6	0.4	1814	0	46	0	6.8	0.7
USA	221	1	3	1.6	0.0	180	0	3	0	7.4	1.0
VIR	582	1	4	1.5	0.1	584	0	4	0	7.4	0.6
VPB	21	14	38	1.2	-0.4	25	0	24	0	4.0	0.1
VRG	334	1	25	2.5	0.5	336	0	100	0	13.0	1.6
VVR	61	0	36	2.9	1.6	61	0	34	0	5.8	0.8
WOA	244	0	6	1.6	0.4	250	0	6	0	7.9	0.8
XAS	22	0	36	3.3	-1.6	22	0	32	0	3.7	0.0
YSS	78	0	3	1.2	0.9	77	0	4	0	6.7	1.1
AR	1311	0	100	3.0	2.8	1310	0	4	0	5.4	0.7
AU	57941	0	13	1.4	0.5	57951	0	13	0	5.4	0.6
EU	99798	0	24	1.3	0.4	99798	0	24	0	4.6	0.4
KL	6745	0	43	2.1	1.6	6721	0	55	0	5.2	0.7
LH	3106	0	9	1.6	1.2	3085	0	9	0	5.3	0.8
MK	5793	0	30	2.7	2.1	5730	0	7	0	6.6	0.9
SA	3363	0	38	1.7	0.7	3363	0	13	0	6.2	0.9
SV	1843	0	65	2.5	2.2	1826	0	2	0	5.3	0.5
WA	330	7	15	1.6	0.5	321	11	83	0	10.2	-1.1
XX	4492	2	9	1.4	0.5	4464	0	10	0	8.9	1.2
N	864	2	17	2.1	0.8	912	0	17	0	7.1	0.9
US ACARS	887431	1	55	1.2	0.5	887424	0	54	0	5.3	0.7

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP.	:Number of observations received excluding duplicates.
:PG	:Percentage of observations with gross errors.
:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
:PC	:Percentage of observations with calm winds.
:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

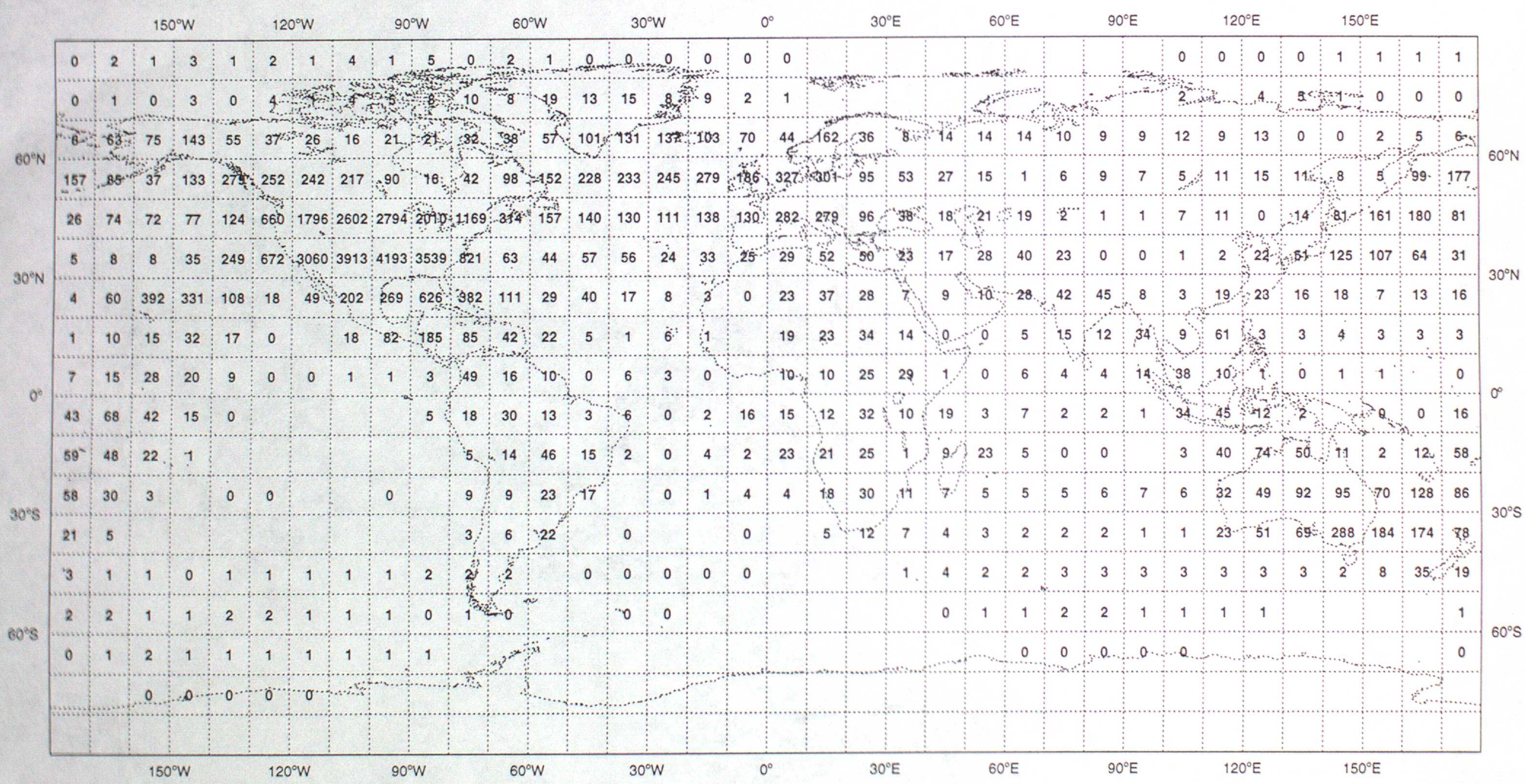
		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	269	0	14	1.1	0.0	268	0	16	0	8.1	0.9
AAR	23	4	39	1.7	-1.3	23	0	39	0	8.1	0.0
ACA	23	13	30	1.2	0.0	23	0	17	0	5.5	-0.4
AFL	24	0	8	3.3	1.9	25	0	4	0	11.0	-0.2
AFR	68	1	10	1.5	0.1	68	0	10	0	10.2	0.0
ANZ	106	7	32	1.5	-0.1	108	2	30	0	7.5	0.1
AXF	42	0	29	1.2	-0.3	42	0	29	0	4.8	0.6
AZA	22	0	5	1.2	0.3	22	0	9	0	12.0	0.1
BAF	84	2	8	1.7	0.8	86	1	6	0	8.2	1.6
CFC	124	2	6	1.2	0.6	125	0	6	0	5.3	0.3
CMI	88	0	18	3.9	-1.9	83	1	8	0	10.5	4.1
COA	256	0	30	1.2	0.3	253	0	33	0	9.9	1.6
CTM	32	0	22	4.0	-2.8	32	0	22	0	11.2	2.0
CUB	42	0	2	2.0	1.1	43	0	5	0	7.8	0.6
DAL	184	3	54	2.0	0.5	186	0	51	0	5.7	1.4
DHL	53	0	53	6.4	-6.3	53	0	4	0	9.3	2.4
DLH	162	1	25	1.5	0.6	157	0	24	0	5.7	0.9
EIA	29	14	52	1.4	0.0	29	0	45	0	6.2	1.5
EVA	87	0	34	1.3	-0.7	90	0	36	0	6.0	-0.4
EWW	72	7	11	1.2	0.7	70	0	7	0	8.0	0.9
FDX	443	0	18	1.4	0.8	440	0	19	0	7.3	0.4
FWQ	23	17	70	3.6	-1.1	23	0	61	0	12.4	4.0
FXI	53	4	8	2.3	1.0	51	0	10	0	11.1	3.0
GAF	40	3	3	1.1	0.2	39	0	3	0	7.8	2.3
GCO	281	0	5	1.4	0.4	284	0	100	0	15.2	4.5
GHA	44	2	16	2.3	0.0	44	0	20	0	14.4	1.5
HAL	150	1	41	1.8	0.1	148	0	40	0	7.6	1.4
IBE	100	2	27	1.4	0.1	98	0	33	0	11.8	2.2
ICE	69	0	4	1.1	-0.3	68	0	6	0	7.7	0.6
JAL	77	3	14	1.9	-0.4	77	0	13	0	8.9	0.7
JAZ	165	1	6	2.0	0.9	161	0	4	0	7.1	0.2
KAL	48	2	35	2.6	-0.3	48	0	31	0	8.1	1.4
KIW	89	0	40	2.3	1.8	87	0	43	0	8.0	0.4
KLM	88	0	0	1.5	0.7	88	0	2	0	7.2	0.0
LAN	124	4	10	3.1	0.2	142	1	2	0	10.2	5.5
LIB	60	2	7	2.0	1.3	61	0	8	0	8.6	-1.0
LTU	25	0	0	1.0	-0.3	25	0	0	0	5.1	1.2
MAS	34	0	26	0.9	0.3	34	0	29	0	5.8	2.1
NAT	27	4	4	2.2	0.6	27	0	4	0	7.6	1.3
NCA	96	1	3	2.2	0.2	93	0	2	0	6.7	0.5
NWA	338	1	12	1.4	0.6	341	1	13	0	7.4	-0.1
NZL	7901	0	59	1.4	0.3	7901	0	59	0	5.3	0.9
PAC	35	0	11	2.2	-0.3	35	0	6	0	5.5	-0.6
PAL	50	0	8	1.6	-0.7	42	0	12	0	7.1	0.6
QFA	191	5	60	1.5	0.4	191	0	58	0	8.4	1.2
RCH	159	1	30	3.3	-1.5	156	0	100	0	12.8	2.7
RRR	172	2	12	3.5	2.5	172	0	8	0	8.5	1.7
RZO	48	8	8	0.8	0.1	49	0	2	0	6.8	-0.2
SAA	55	4	9	1.9	-1.1	57	0	5	0	6.0	-0.1
SIA	59	0	2	1.2	0.4	61	0	2	0	4.0	1.5
SVF	20	0	0	3.0	0.6	20	0	0	0	5.3	0.4
SWR	23	0	13	1.4	0.9	24	0	13	0	14.1	4.1
THA	21	0	0	0.8	0.3	22	0	14	0	10.6	1.0
UAL	251149	0	100	1.1	0.0	250841	0	100	0	4.2	0.3
UPS	88	0	33	1.2	0.2	88	0	33	0	5.6	0.9
VHJ	50	0	6	2.6	0.7	52	0	0	0	9.3	-1.5
VVP	30	3	60	5.0	2.1	30	0	57	0	13.4	3.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AR	1264	1	100	2.4	1.8	1260	0	50	0	4.4	0.9
AU	88571	0	64	1.2	0.3	88575	0	64	0	4.1	0.3
EU	596783	0	74	1.0	0.3	596469	0	73	0	3.6	0.0
KL	5354	0	78	2.3	1.6	5341	0	83	0	4.0	0.4
LH	1159	0	65	1.2	0.6	1143	0	65	0	3.9	0.7
MK	4298	0	67	2.0	1.1	4272	0	54	0	4.7	0.6
SA	1984	0	70	1.8	0.8	1984	0	58	0	4.4	0.8
SV	3391	1	86	3.4	2.8	3375	0	48	0	4.5	1.1
WA	32	22	28	2.1	1.3	31	0	87	0	11.9	-3.2
XX	645	5	11	1.6	0.3	641	0	12	0	10.8	2.2
US ACARS	1189164	0	71	1.3	0.3	1186424	0	71	0	4.3	0.4

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. JUNE 2001

Observations with O-B vector difference greater than 60 ms-1 excluded

Global average number of observations in 24 hours = 44136



0	2	1	3	1	2	1	4	1	5	0	2	1	0	0	0	0	0	0										0	0	0	0	1	1	1	1
0	1	0	3	0	4	1	4	5	8	10	8	19	13	15	8	9	2	1										2		4	5	1	0	0	0
6	63	75	143	55	37	26	16	21	21	32	38	57	101	131	137	103	70	44	162	36	8	14	14	14	10	9	9	12	9	13	0	0	2	5	6
157	85	37	133	275	252	242	217	90	16	42	98	152	228	233	245	279	186	327	301	95	53	27	15	1	6	9	7	5	11	15	11	8	5	99	177
26	74	72	77	124	660	1796	2602	2794	2010	1169	314	157	140	130	111	138	130	282	279	96	38	18	21	19	2	1	1	7	11	0	14	81	161	180	81
5	8	8	35	249	672	3060	3913	4193	3539	821	63	44	57	56	24	33	25	29	52	50	23	17	28	40	23	0	0	1	2	22	51	125	107	64	31
4	60	392	331	108	18	49	202	269	626	382	111	29	40	17	8	3	0	23	37	28	7	9	10	28	42	45	8	3	19	23	16	18	7	13	16
1	10	15	32	17	0		18	82	185	85	42	22	5	1	6	1		19	23	34	14	0	0	5	15	12	34	9	61	3	3	4	3	3	3
7	15	28	20	9	0	0	1	1	3	49	16	10	0	6	3	0		10	10	25	29	1	0	6	4	4	14	38	10	1	0	1	1		0
43	68	42	15	0					5	18	30	13	3	6	0	2	16	15	12	32	10	19	3	7	2	2	1	34	45	12	2		0	0	16
59	48	22	1							5	14	46	15	2	0	4	2	23	21	25	1	9	23	5	0	0		3	40	74	50	11	2	12	58
58	30	3		0	0			0		9	9	23	17		0	1	4	4	18	30	11	7	5	5	5	6	7	6	32	49	92	95	70	128	86
21	5									3	6	22		0			0		5	12	7	4	3	2	2	2	1	1	23	51	69	288	184	174	78
3	1	1	0	1	1	1	1	1	2	2	2		0	0	0	0	0				1	4	2	2	3	3	3	3	3	3	3	2	8	35	19
2	2	1	1	2	2	1	1	1	0	1	0			0	0							0	1	1	2	2	1	1	1	1					1
0	1	2	1	1	1	1	1	1	1															0	0	0	0	0							0
		0	0	0	0	0																													

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. JUNE 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 71795

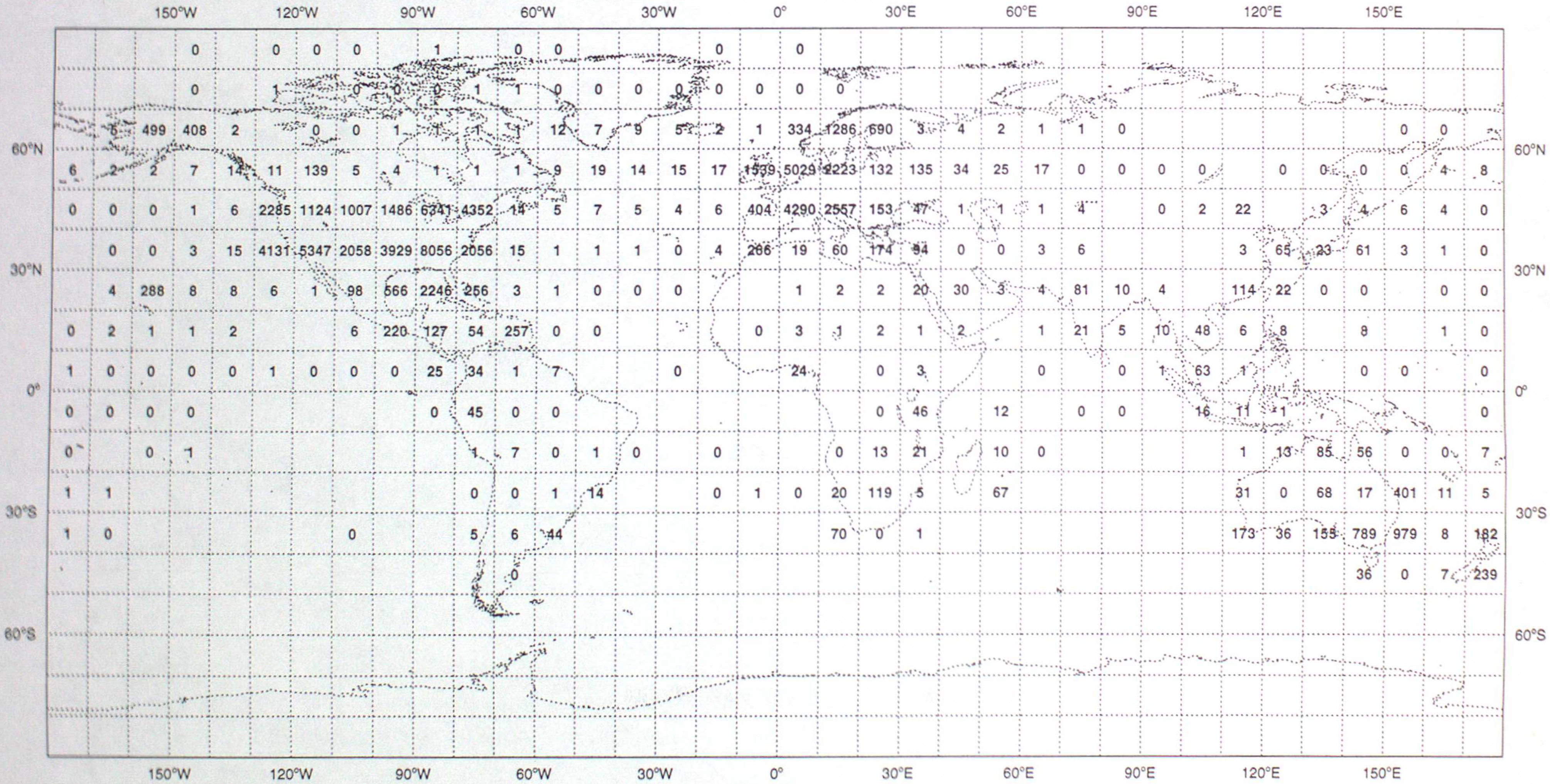

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 0 0 0 1 0 0 0 0
0 1 0 0 0 1 1 0 0 0 0 0 0 0 0
5 499 408 2 0 0 1 1 1 1 12 7 9 5 2 1 334 1286 690 3 4 2 1 1 0 0 0
6 2 2 7 14 11 139 5 4 1 1 1 9 19 14 15 17 1539 5029 2223 132 135 34 25 17 0 0 0 0 0 0 0 0 4 8
0 0 0 1 6 2285 1124 1007 1486 6341 4352 14 5 7 5 4 6 404 4290 2557 153 47 1 1 1 4 0 2 22 3 4 6 4 0
0 0 3 15 4131 5347 2058 3929 8056 2056 15 1 1 1 0 4 266 19 60 174 94 0 0 3 6 3 65 23 61 3 1 0
4 288 8 8 6 1 98 566 2246 256 3 1 0 0 0 1 2 2 20 30 3 4 81 10 4 114 22 0 0 0 0
0 2 1 1 2 6 220 127 54 257 0 0 0 3 1 2 1 2 1 21 5 10 48 6 8 8 1 0
1 0 0 0 0 1 0 0 0 25 34 1 7 0 24 0 3 0 0 1 63 1 0 0 0
0 0 0 0 0 45 0 0 0 46 12 0 0 16 11 1 0
0 0 1 1 7 0 1 0 0 0 13 21 10 0 1 13 85 56 0 0 7
1 1 0 0 1 14 0 1 0 20 119 5 67 31 0 68 17 401 11 5
1 0 0 5 6 44 70 0 1 173 36 155 789 979 8 182
0 36 0 7 239

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. JUNE 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

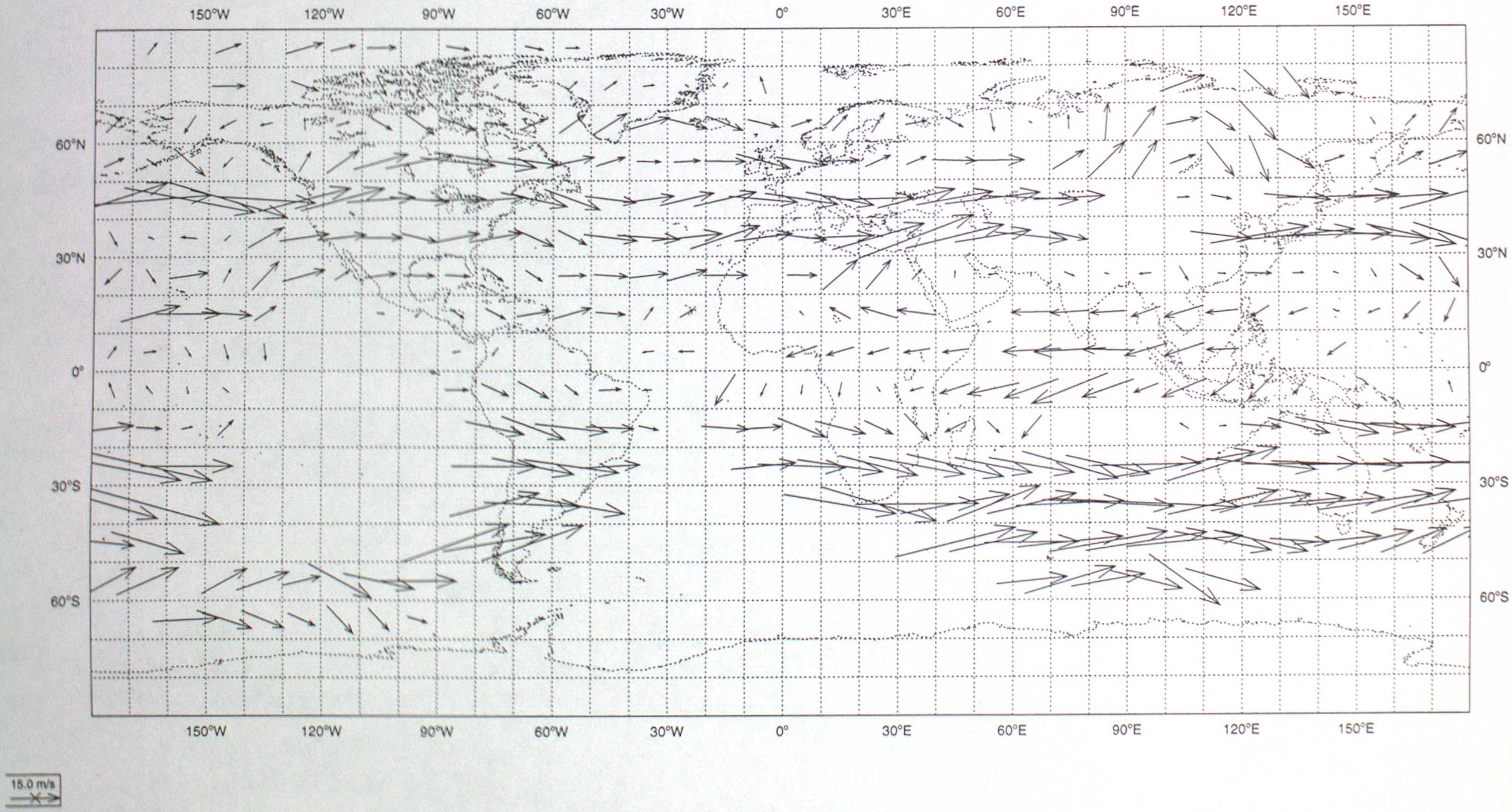

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. JUNE 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

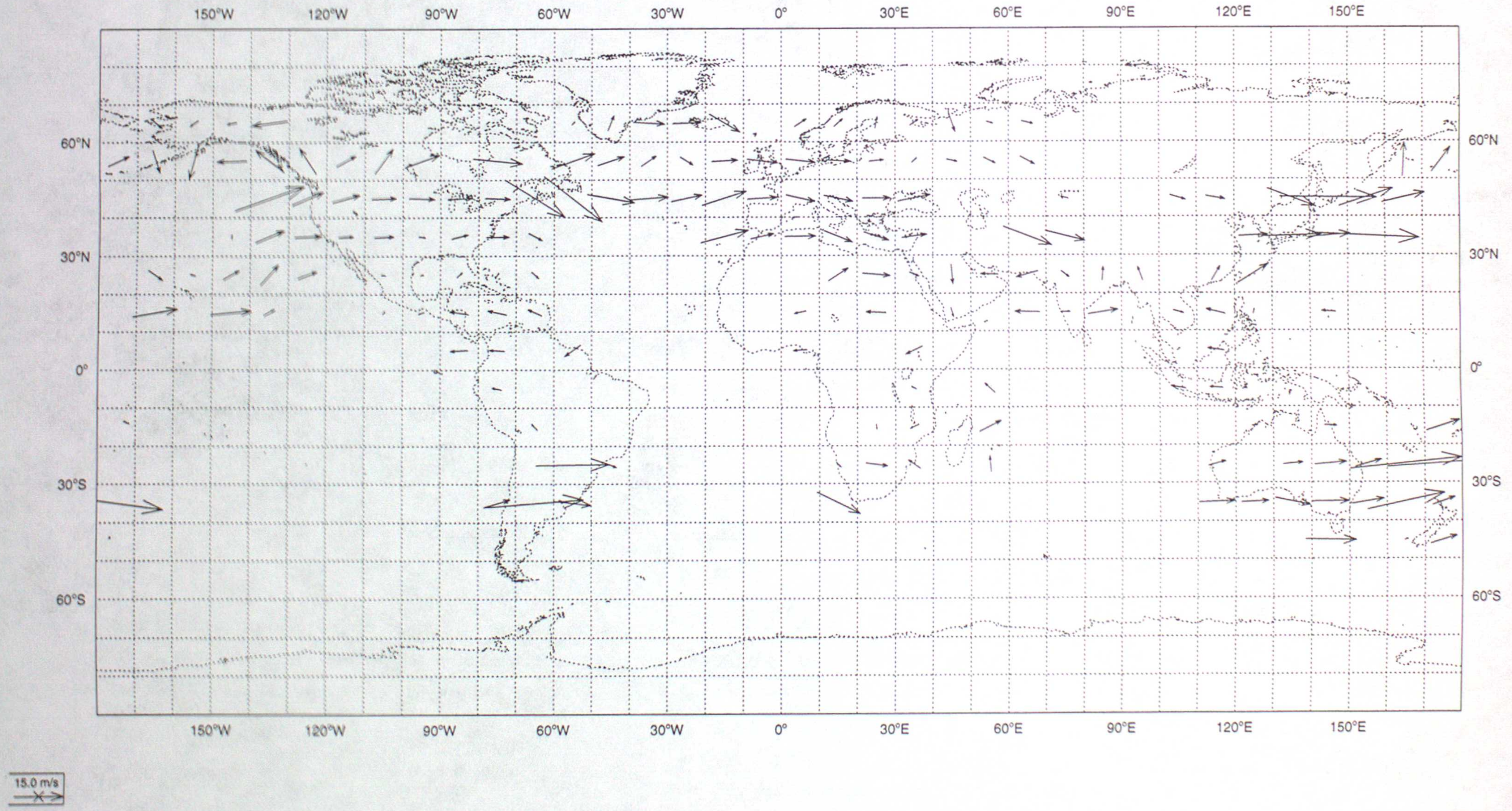

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. JUNE 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

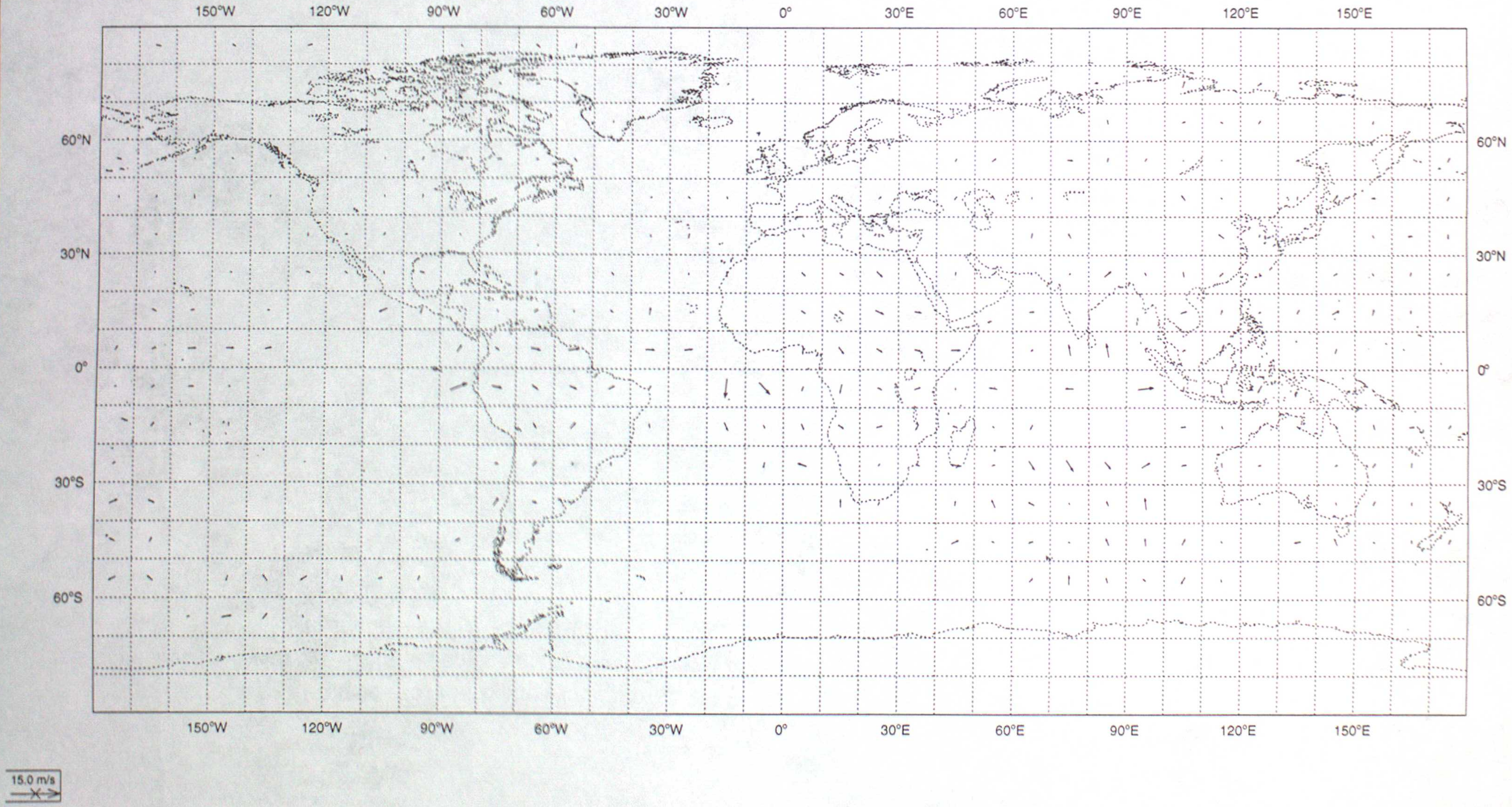

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. JUNE 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

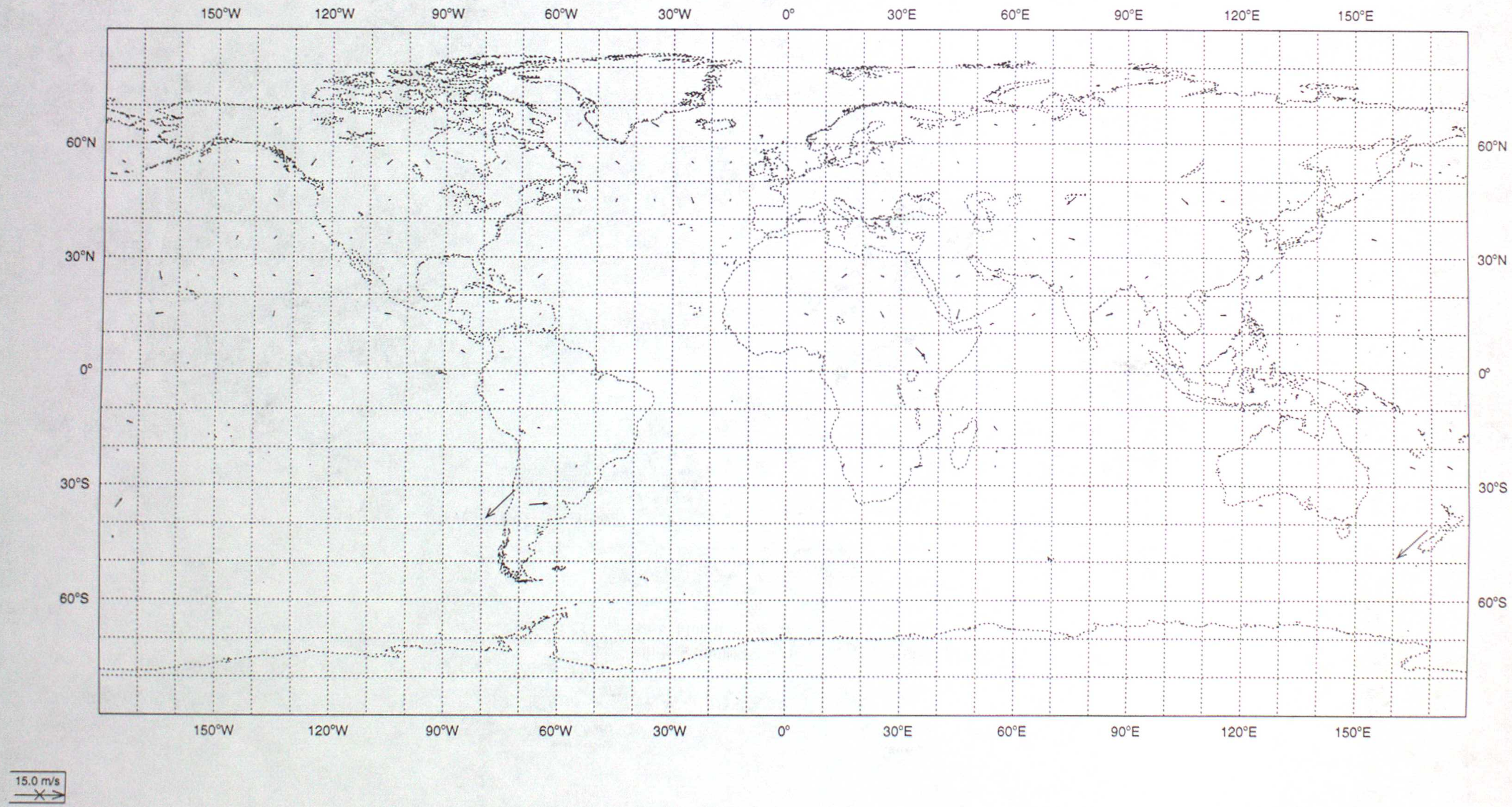

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). JUNE 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

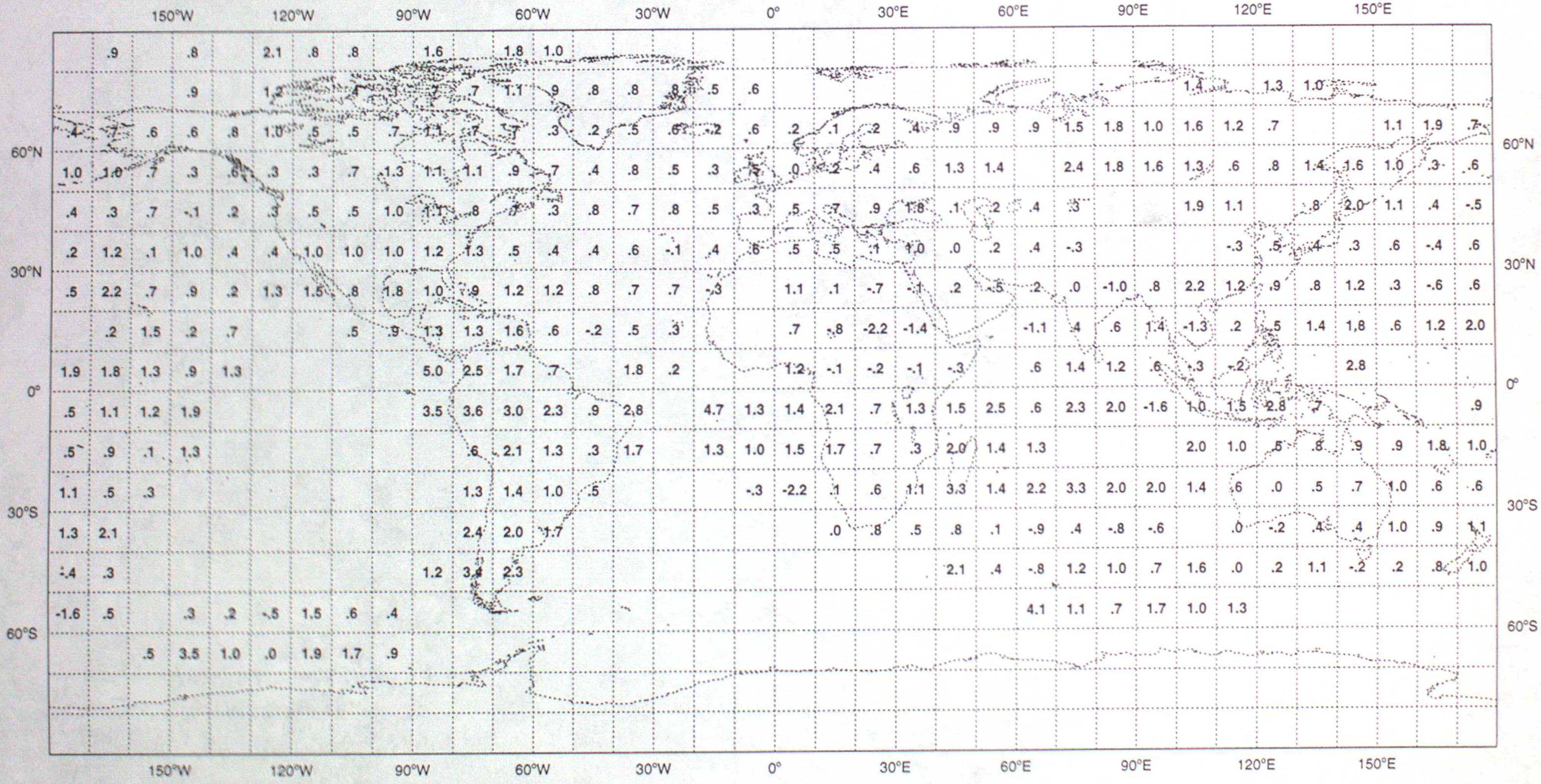

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.9 .8 2.1 .8 .8 1.6 1.8 1.0
.9 1.2 .7 1.1 .9 .8 .8 .8 .5 .6 1.4 1.3 1.0
.4 .7 .6 .6 .8 1.0 .5 .5 .7 1.1 .7 .7 .3 .2 .5 .6 .2 .6 .2 .1 .2 .4 .9 .9 .9 1.5 1.8 1.0 1.6 1.2 .7 1.1 1.9 .7
1.0 1.0 .7 .3 .6 .3 .3 .7 1.3 1.1 1.1 .9 .7 .4 .8 .5 .3 .5 .0 .2 .4 .6 1.3 1.4 2.4 1.8 1.6 1.3 .6 .8 1.4 1.6 1.0 .3 .6
.4 .3 .7 -.1 .2 .3 .5 .5 1.0 1.1 .8 .3 .8 .7 .8 .5 .3 .5 .7 .9 1.8 .1 .2 .4 .3 1.9 1.1 .8 2.0 1.1 .4 -.5
.2 1.2 .1 1.0 .4 .4 1.0 1.0 1.0 1.2 1.3 .5 .4 .4 .6 -.1 .4 .6 .5 .5 .1 1.0 .0 .2 .4 -.3 -.3 .5 .4 .3 .6 -.4 .6
.5 2.2 .7 .9 .2 1.3 1.5 .8 1.8 1.0 .9 1.2 1.2 .8 .7 .7 -.3 1.1 .1 -.7 -.1 .2 .5 .2 .0 -1.0 .8 2.2 1.2 .9 .8 1.2 .3 -.6 .6
.2 1.5 .2 .7 .5 .9 1.3 1.3 1.6 .6 -.2 .5 .3 .7 -.8 -2.2 -1.4 -1.1 .4 .6 1.4 -1.3 .2 .5 1.4 1.8 .6 1.2 2.0
1.9 1.8 1.3 .9 1.3 5.0 2.5 1.7 .7 1.8 .2 1.2 -.1 -.2 -.1 -.3 .6 1.4 1.2 .6 -.3 -.2 2.8
.5 1.1 1.2 1.9 3.5 3.6 3.0 2.3 .9 2.8 4.7 1.3 1.4 2.1 .7 1.3 1.5 2.5 .6 2.3 2.0 -1.6 1.0 1.5 2.8 .7 .9
.5 .9 .1 1.3 .6 2.1 1.3 .3 1.7 1.3 1.0 1.5 1.7 .7 .3 2.0 1.4 1.3 2.0 1.0 .5 .8 .9 .9 1.8 1.0
1.1 .5 .3 1.3 1.4 1.0 .5 -.3 -2.2 .1 .6 1.1 3.3 1.4 2.2 3.3 2.0 2.0 1.4 .6 .0 .5 .7 1.0 .6 -.6
1.3 2.1 2.4 2.0 1.7 .0 .8 .5 .8 .1 -.9 .4 -.8 -.6 .0 -.2 .4 .4 1.0 .9 1.1
-.4 .3 1.2 3.4 2.3 2.1 .4 -.8 1.2 1.0 .7 1.6 .0 .2 1.1 -.2 .2 .8 1.0
-1.6 .5 .3 .2 -.5 1.5 .6 .4 4.1 1.1 .7 1.7 1.0 1.3
.5 3.5 1.0 .0 1.9 1.7 .9

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). JUNE 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

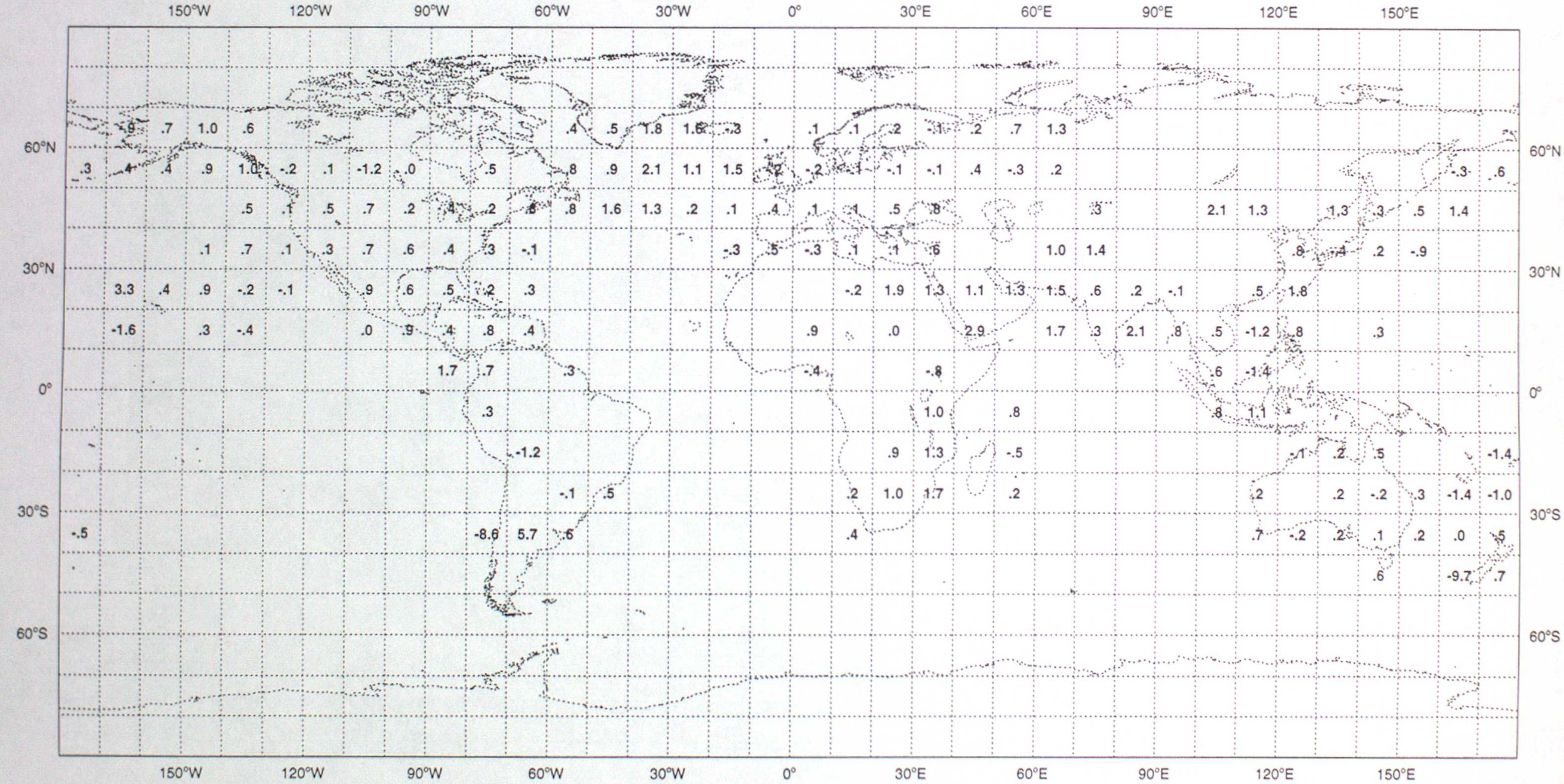

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.9 .7 1.0 .6 .4 .5 1.8 1.6 -.3 .1 .1 .2 -.1 .2 .7 1.3
.3 .4 .4 .9 1.0 -.2 .1 -1.2 .0 .5 .8 .9 2.1 1.1 1.5 .2 -.2 .1 -.1 -.1 .4 -.3 .2 -.3 .6
.5 .1 .5 .7 .2 .4 .2 .8 .8 1.6 1.3 .2 .1 .4 .1 .1 .5 .8 .3 2.1 1.3 1.3 .3 .5 1.4
.1 .7 .1 .3 .7 .6 .4 .3 -.1 -.3 .5 -.3 .1 .1 .6 1.0 1.4 .8 .4 .2 -.9
3.3 .4 .9 -.2 -.1 .9 .6 .5 .2 .3 -.2 1.9 1.3 1.1 1.3 1.5 .6 .2 -.1 .5 1.8
-1.6 .3 -.4 .0 .9 .4 .8 .4 .9 .0 2.9 1.7 .3 2.1 .8 .5 -1.2 .8 .3
1.7 .7 .3 -.4 -.8 .6 -1.4
.3 1.0 .8 .8 1.1
-1.2 .9 1.3 -.5 -.1 .2 .5 -1.4
-.1 .5 .2 1.0 1.7 .2 .2 .2 -.2 .3 -1.4 -1.0
-.5 -8.6 5.7 .6 .4 .7 -.2 .2 .1 .2 .0 .5
.6 -9.7 .7

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). JUNE 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

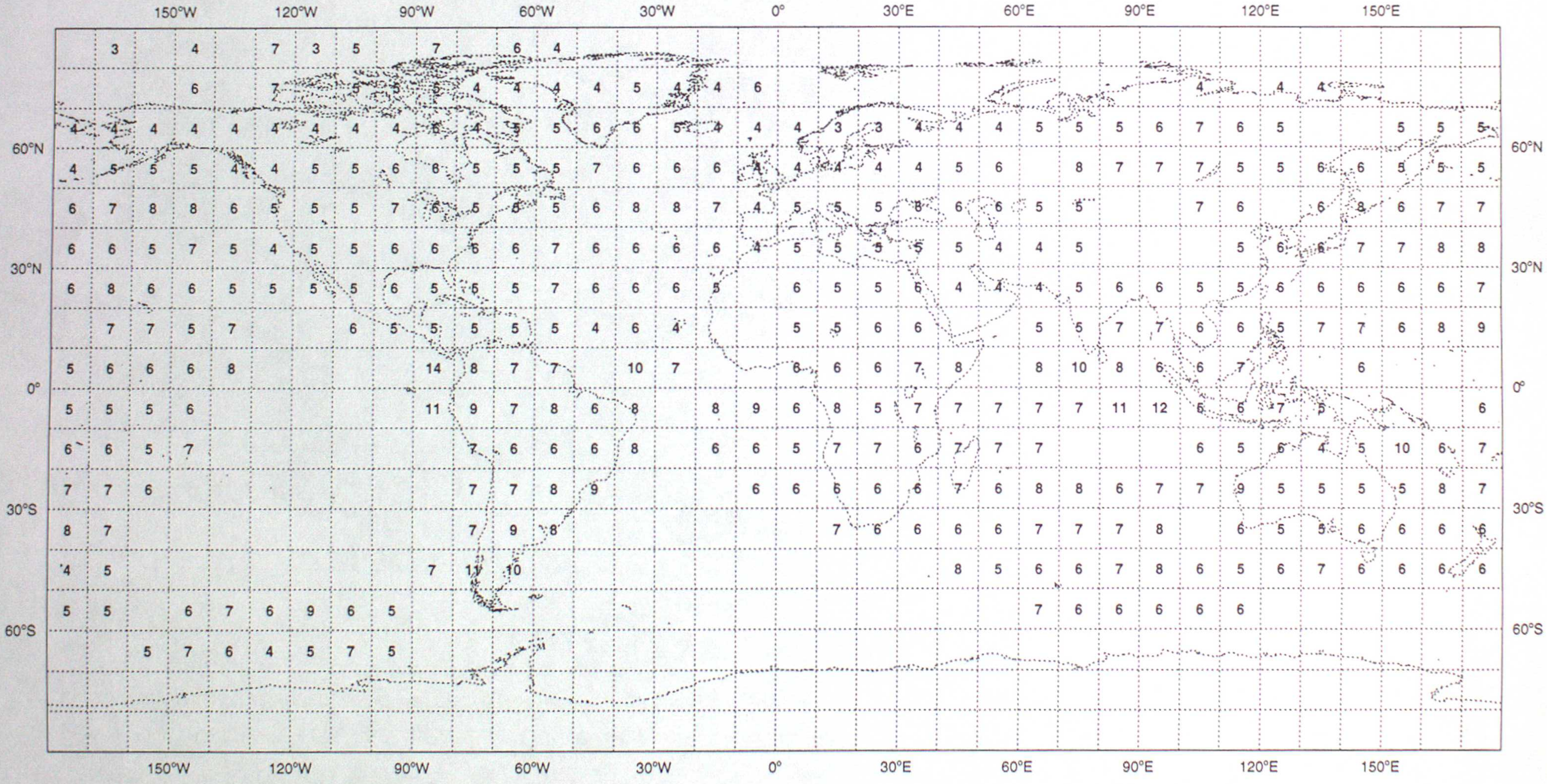
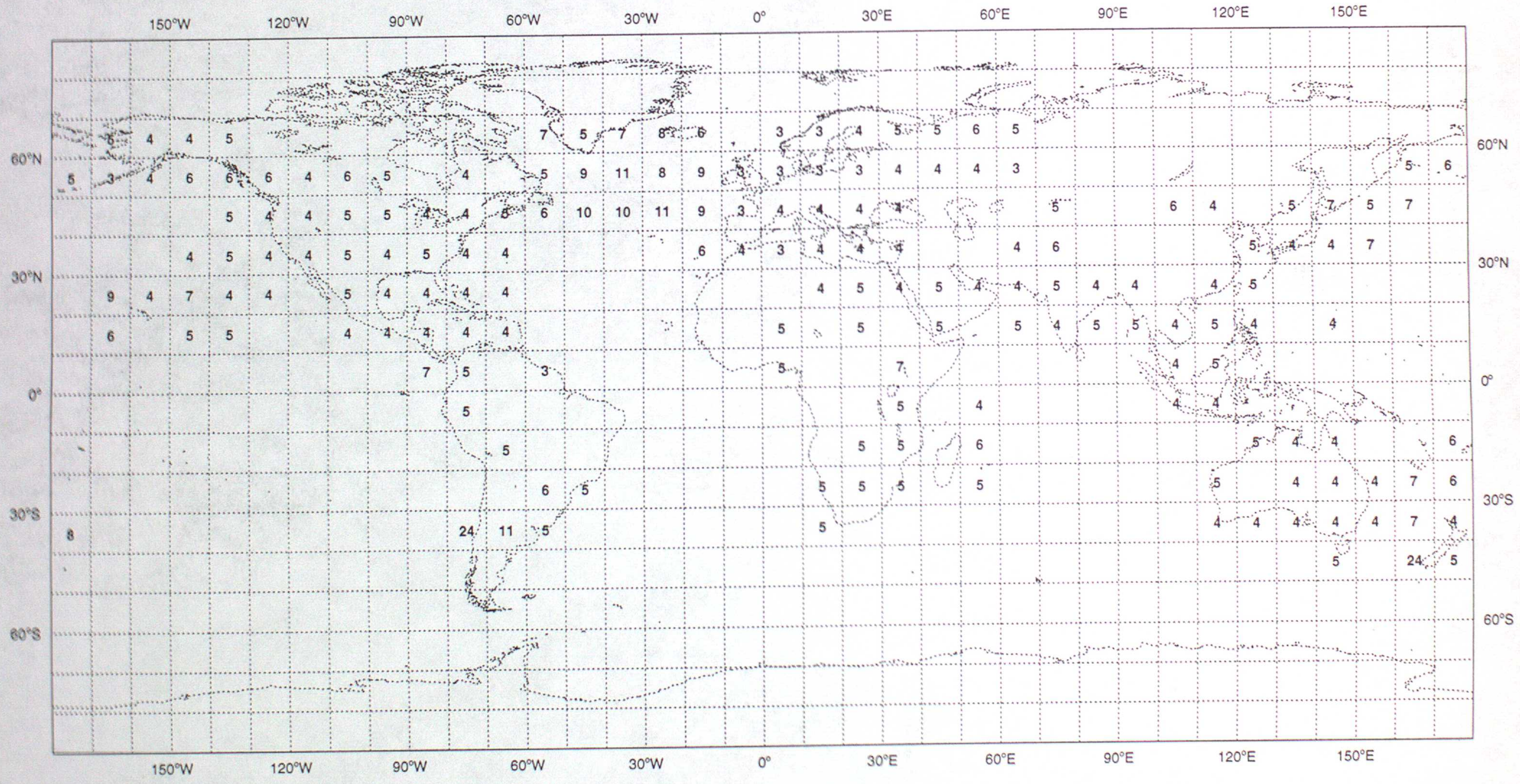

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). JUNE 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present



150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
5 4 4 5 7 5 7 8 6 3 3 4 5 5 6 5
5 3 4 6 6 6 4 6 5 4 5 9 11 8 9 3 3 3 3 4 4 4 3 5 6
5 4 4 5 5 4 4 5 6 10 10 11 9 3 4 4 4 4 5 6 4 5 7 5 7
4 5 4 4 5 4 5 4 4 6 4 3 4 4 4 4 6 5 4 4 7
9 4 7 4 4 5 4 4 4 4 4 5 4 5 4 5 4 4 4 5
6 5 5 4 4 4 4 4 5 5 5 5 4 5 5 4 5 4 4
7 5 3 5 7 4 5
5 5 4 4 4
5 5 5 6 5 4 4 6
6 5 5 5 5 5 5 4 4 4 7 6
8 24 11 5 5 4 4 4 4 4 7 4
5 24 5

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
23418	00	Z	30	65/ 57	25	0	74.0	208.0	220.8	4
23933	00	Z	50	61/ 69	13	1	57.4	255.8	262.1	7
28722	00	Z	30	55/ 56	25	2	76.2	237.8	249.7	5
28722	12	Z	50	55/ 56	27	1	62.8	198.2	207.9	6
30230	12	Z	30	58/ 108	21	1	52.4	190.4	197.5	4
31168	00	Z	250	56/ 138	24	0	68.1	48.4	83.5	4
32098	00	Z	100	49/ 143	28	0	41.2	145.9	151.6	4
33837	00	Z	50	46/ 31	19	2	123.5	173.4	212.8	6
34247	12	Z	50	50/ 41	28	0	55.0	217.0	223.9	6
42027	00	Z	150	34/ 75	16	0	116.6	-77.7	140.1	6
42027	12	Z	1000	34/ 75	25	0	32.4	-32.8	46.1	6
42314	00	Z	50	27/ 95	16	1	67.4	193.4	204.8	6
42314	12	Z	50	27/ 95	11	1	130.4	127.9	182.6	6
42339	00	Z	150	26/ 73	10	0	89.9	105.0	138.2	5
42369	00	Z	30	27/ 81	8	3	113.4	227.1	253.9	8
42369	12	Z	50	27/ 81	14	1	134.6	135.6	191.1	7
42397	00	Z	150	27/ 88	10	0	115.4	-18.8	116.9	6
42397	12	Z	100	27/ 88	15	1	119.0	-50.5	129.3	4
42410	00	Z	150	26/ 92	24	0	112.8	26.7	115.9	7
42410	12	Z	30	26/ 92	10	0	102.0	176.5	203.8	4
42492	12	Z	200	26/ 85	19	0	74.1	37.1	82.8	4
42647	00	Z	70	23/ 73	12	1	175.0	79.6	192.2	7
42647	12	Z	70	23/ 73	12	3	67.4	296.7	304.2	10
42667	00	Z	50	23/ 77	12	1	103.0	144.3	177.3	5
42667	12	Z	200	23/ 77	14	0	108.6	13.9	109.5	6
42701	00	Z	30	23/ 85	11	1	63.2	270.3	277.6	6
42724	00	Z	400	24/ 91	19	0	64.8	24.1	69.1	7
42724	12	Z	150	24/ 91	13	0	114.8	-17.8	116.2	4
42867	00	Z	30	21/ 79	14	0	144.8	149.5	208.2	8
42867	12	Z	70	21/ 79	13	0	132.6	53.4	143.0	4
42971	00	Z	70	20/ 86	24	0	87.1	199.3	217.5	7
42971	12	Z	50	20/ 86	18	1	79.2	167.5	185.3	8
43003	00	Z	100	19/ 73	9	3	125.5	178.3	218.1	4
43003	12	Z	150	19/ 73	7	7	142.3	124.6	189.1	6
43128	00	Z	100	17/ 78	14	0	77.0	-122.6	144.8	6
43192	00	Z	200	15/ 74	15	0	87.5	-95.0	129.2	6
43279	00	Z	200	13/ 80	26	0	64.5	-116.0	132.7	7
43279	12	Z	100	13/ 80	20	0	115.1	6.0	115.3	5
43285	00	Z	200	13/ 75	21	0	77.8	-87.7	117.2	6
43295	00	Z	50	13/ 78	10	0	128.6	106.1	166.7	4
43333	00	Z	150	12/ 93	25	0	87.7	-53.9	102.9	4
43333	12	Z	150	12/ 93	20	0	89.1	-60.6	107.8	4
43353	00	Z	150	10/ 76	18	0	70.2	-133.0	150.4	5
43371	12	Z	50	8/ 77	13	1	84.0	190.5	208.2	6
47058	00	Z	200	39/ 126	9	1	69.7	74.6	102.1	4
47185	00	Z	30	33/ 126	24	0	41.7	268.8	272.0	4
53463	00	Z	50	41/ 112	28	0	89.6	147.6	172.7	9
58203	12	Z	70	33/ 116	28	0	50.9	126.2	136.1	4
58424	00	Z	50	31/ 117	26	0	48.1	145.5	153.3	4
62378	12	Z	30	30/ 31	10	0	30.9	214.4	216.6	4
82332	12	Z	50	-3/ -60	13	0	42.0	185.8	190.5	4
83827	12	Z	50	-26/ -55	10	0	68.3	146.6	161.7	4
84628	12	Z	850	-12/ -77	13	0	4.3	-80.1	80.2	8
91366	00	Z	50	9/ 168	16	1	61.2	265.2	272.2	8

Figure 8. TEMP 500 hPa geopotential mean daily count. JUNE 2001

All hours

Global average number of observations in 24 hours = 1169

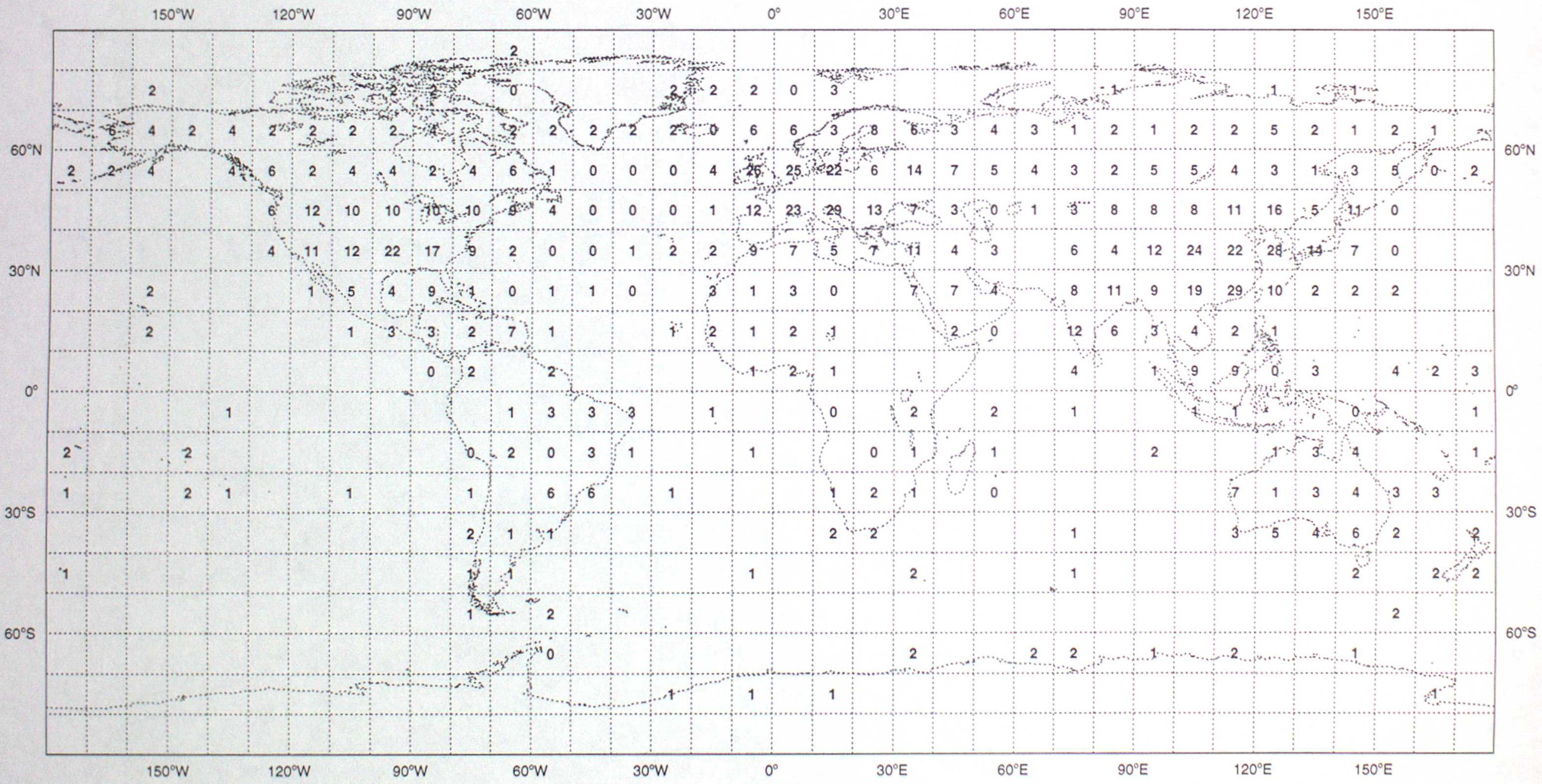

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2
2 2 2 0 2 2 2 0 3 1 1 1
6 4 2 4 2 2 2 2 4 2 2 2 2 2 0 6 6 3 8 6 3 4 3 1 2 1 2 2 5 2 1 2 1
2 2 4 4 6 2 4 4 2 4 6 1 0 0 0 4 26 25 22 6 14 7 5 4 3 2 5 5 4 3 1 3 5 0 2
6 12 10 10 10 10 9 4 0 0 0 1 12 23 29 13 7 3 0 1 3 8 8 8 11 16 5 11 0
4 11 12 22 17 9 2 0 0 1 2 2 9 7 5 7 11 4 3 6 4 12 24 22 28 14 7 0
2 1 5 4 9 1 0 1 1 0 3 1 3 0 7 7 4 8 11 9 19 29 10 2 2 2
2 1 3 3 2 7 1 1 2 1 2 1 2 0 12 6 3 4 2 1
0 2 2 1 2 1 4 1 9 9 0 3 4 2 3
1 1 3 3 3 1 0 2 2 1 1 1 0 1
2 2 0 2 0 3 1 1 0 1 1 2 1 3 4 1
1 2 1 1 1 6 6 1 1 2 1 0 7 1 3 4 3 3
2 1 1 2 2 1 3 5 4 6 2 2
1 1 1 1 2 1 2 2 2
1 2 2
0 2 2 2 1 2 1
1 1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

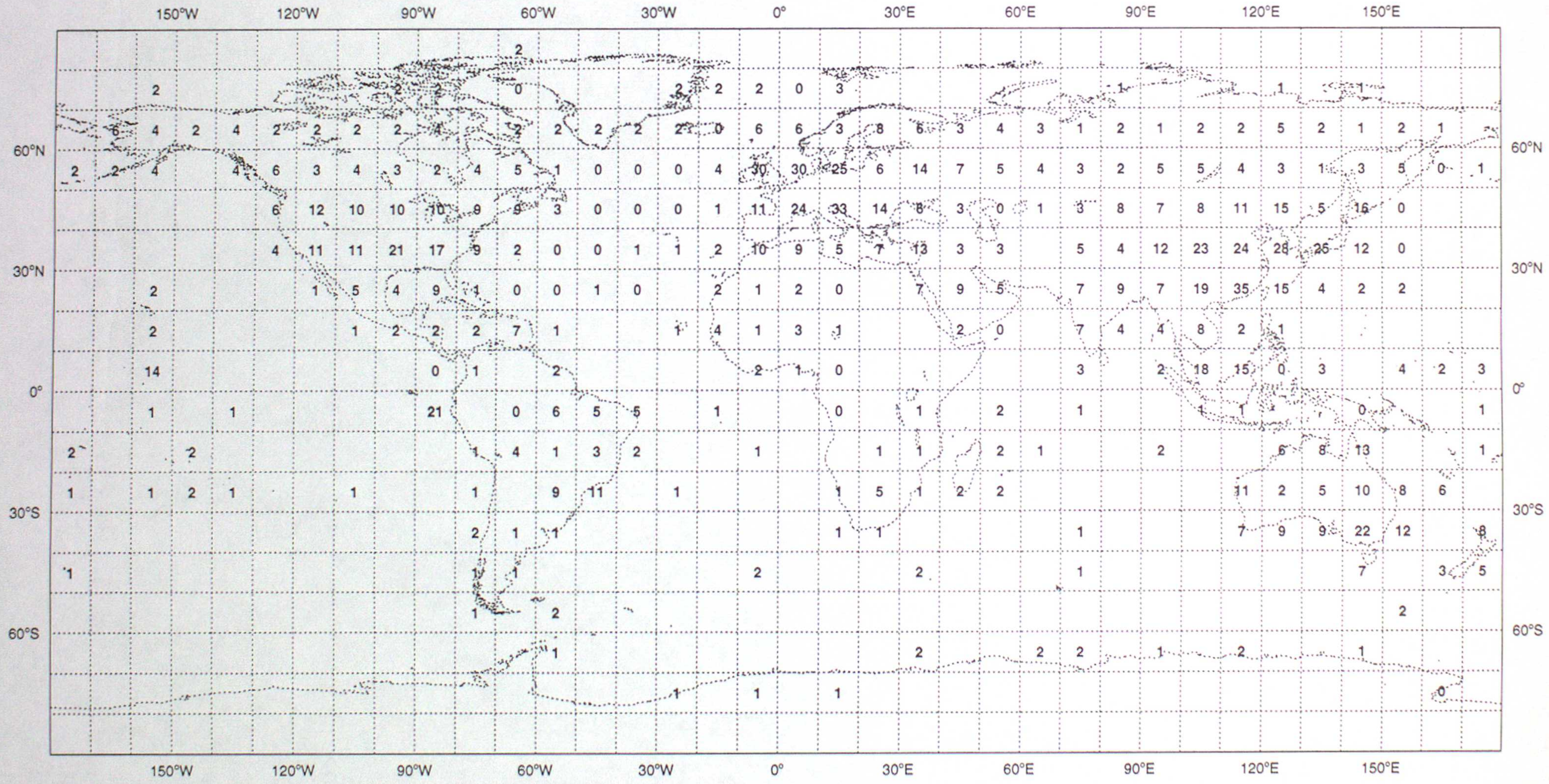
GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
PSPIU	00	V	150	-5/ -81	29	0	100	-2.0	3.2	24.5	4
PSPIU	12	V	150	-5/ -81	28	0	100	-8.2	3.5	27.8	3
07761	12	V	150	42/ 9	15	0	13	-4.2	3.8	19.8	1
10771	12	V	200	49/ 12	17	0	5	-5.1	2.2	20.6	1
17220	00	V	100	38/ 27	28	0	14	-1.5	2.3	15.1	1
17351	00	V	200	37/ 35	26	0	100	-9.6	0.5	15.3	1
17351	12	V	150	37/ 35	20	0	100	-8.2	-2.0	16.1	1
40809	12	V	250	33/ 59	10	1	20	-8.0	0.2	16.8	1
43369	00	V	100	8/ 73	13	0	7	-1.2	14.4	21.9	2
43371	00	V	300	8/ 77	17	0	5	4.1	-0.3	15.1	1
48455	12	V	100	14/ 101	13	0	15	15.0	7.6	18.5	1
60360	12	V	150	37/ 8	18	0	100	0.2	-9.6	15.2	1
61902	12	V	150	-8/ -14	16	0	18	11.4	0.7	15.1	1
63985	00	V	150	-5/ 56	25	0	12	-7.1	-2.5	15.7	1
63985	12	V	150	-5/ 56	24	0	20	-8.6	-1.4	15.0	1
65578	00	V	100	5/ -4	13	0	100	-5.4	-1.8	15.1	1
65578	12	V	100	5/ -4	11	0	100	-0.7	-0.2	18.3	1
68174	12	V	200	-24/ 29	19	0	10	-10.9	3.8	16.1	2
68263	12	V	150	-26/ 28	17	0	17	-11.9	5.7	21.3	4
68442	12	V	200	-29/ 26	14	0	21	-15.0	5.4	22.0	3
68461	12	V	250	-28/ 28	17	0	11	-0.4	-2.3	17.9	2
68512	12	V	200	-30/ 18	23	0	100	-13.4	3.6	20.2	4
68588	12	V	300	-30/ 31	12	0	33	-3.4	-1.9	16.3	1
68842	12	V	250	-34/ 26	14	0	14	-12.2	2.0	15.3	2
71915	00	V	400	64/ -83	29	0	6	-3.4	-2.1	17.1	1
72280	12	V	200	33/-115	11	0	9	-0.6	-2.3	16.3	1
76225	00	V	300	29/-106	22	1	4	-0.5	4.2	15.2	1
80241	12	V	500	5/ -71	11	0	9	1.3	4.7	17.1	1
83612	00	V	200	-20/ -55	17	0	100	-4.1	-3.8	15.3	1
83612	12	V	200	-20/ -55	27	0	100	-2.6	-3.6	17.1	2
96035	00	V	300	4/ 99	10	0	10	5.1	3.6	19.3	1

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. JUNE 2001
All hours
Global average number of observations in 24 hours = 1379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2
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6 4 2 4 2 2 2 2 4 2 2 2 2 2 0 6 6 3 8 6 3 4 3 1 2 1 2 2 5 2 1 2 1
2 2 4 4 6 3 4 3 2 4 5 1 0 0 0 4 30 30 25 6 14 7 5 4 3 2 5 5 4 3 1 3 5 0 1
6 12 10 10 10 9 9 3 0 0 0 1 11 24 33 14 8 3 0 1 3 8 7 8 11 15 5 16 0
4 11 11 21 17 9 2 0 0 1 1 2 10 9 5 7 13 3 3 5 4 12 23 24 28 25 12 0
2 1 5 4 9 1 0 0 1 0 2 1 2 0 7 9 5 7 9 7 19 35 15 4 2 2
2 1 2 2 2 7 1 1 4 1 3 1 2 0 7 4 4 8 2 1
14 0 1 2 2 1 0 3 2 18 15 0 3 4 2 3
1 1 21 0 6 5 5 1 0 1 2 1 1 1 0 1
2 2 1 4 1 3 2 1 1 1 2 1 2 6 8 13 1
1 1 2 1 1 1 9 11 1 1 5 1 2 2 11 2 5 10 8 6
2 1 1 1 1 1 7 9 9 22 12 8
1 1 1 2 2 1 7 3 5
1 2 2
1 2 2 2 1 2 1
1 1 1 0

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
10548	00	DD	51/ 10	29	-10.5	1.8	6.7
10828	00	DD	48/ 9	14	10.3	3.1	8.4
10828	12	DD	48/ 9	6	10.0	8.8	11.5
17280	00	DD	38/ 40	28	-13.0	8.1	8.1
17280	12	DD	38/ 40	25	-11.1	3.1	8.0
29612	12	DD	55/ 78	21	18.8	6.6	16.6
33317	00	DD	50/ 27	23	-10.0	6.0	14.1
43369	00	DD	8/ 73	15	11.5	5.9	20.2
48407	00	DD	15/ 105	19	-10.4	8.3	24.7
48820	12	DD	21/ 106	14	10.2	3.5	23.4
57749	00	DD	28/ 110	24	12.3	3.9	15.2
57749	12	DD	28/ 110	23	12.0	6.0	15.6
59134	12	DD	24/ 118	19	12.2	9.5	20.6
60360	12	DD	37/ 8	20	18.6	4.6	18.5
62337	00	DD	31/ 34	20	-19.1	6.1	11.4
62337	12	DD	31/ 34	25	-20.6	3.0	10.3
71964	00	DD	61/-135	17	10.5	9.5	24.5
78866	12	DD	18/ -63	17	-11.3	5.1	14.1
91334	00	DD	7/ 152	16	10.4	5.7	25.9

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: June 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

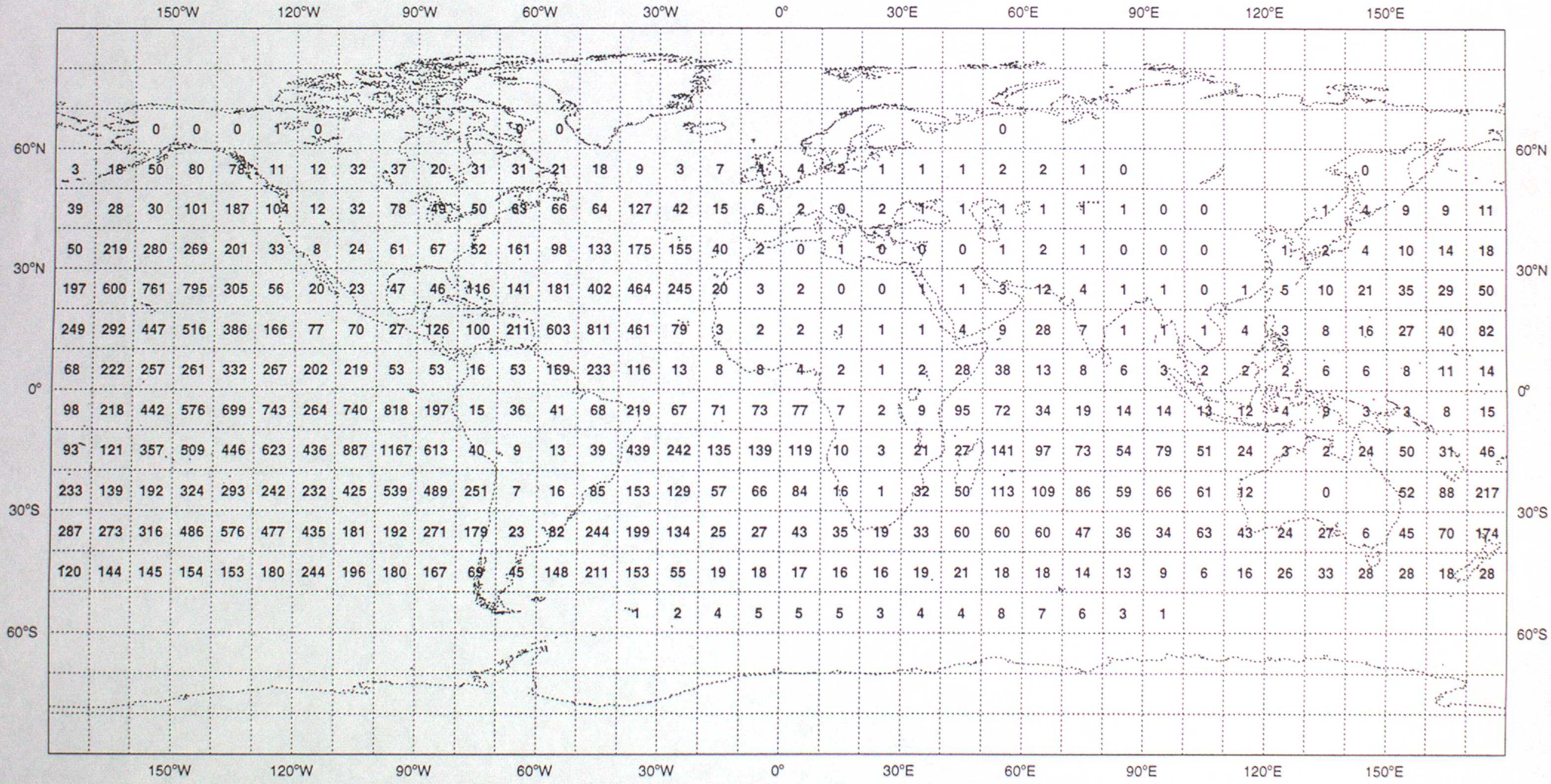
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. JUNE 2001
Global average number of observations in 24 hours = 41830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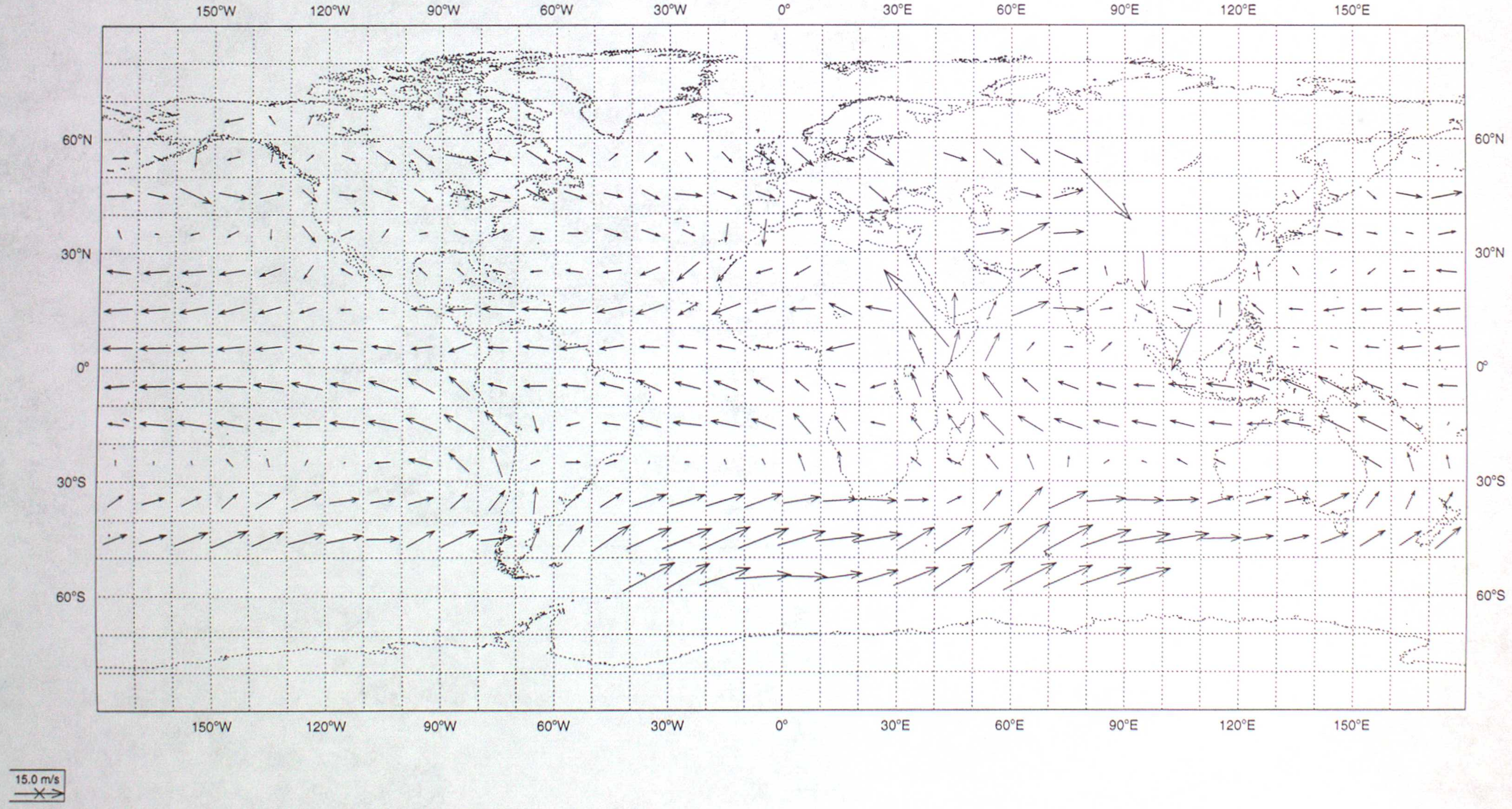
30°S
60°S
0 0 0 1 0 0 0 0
3 18 50 80 78 11 12 32 37 20 31 31 21 18 9 3 7 4 4 2 1 1 1 2 2 1 0 0
39 28 30 101 187 104 12 32 78 49 50 63 66 64 127 42 15 6 2 0 2 1 1 1 1 1 1 0 0 1 4 9 9 11
50 219 280 269 201 33 8 24 61 67 52 161 98 133 175 155 40 2 0 1 0 0 0 1 2 1 0 0 0 1 2 4 10 14 18
197 600 761 795 305 56 20 23 47 46 116 141 181 402 464 245 20 3 2 0 0 1 1 3 12 4 1 1 0 1 5 10 21 35 29 50
249 292 447 516 386 166 77 70 27 126 100 211 603 811 461 79 3 2 2 1 1 1 4 9 28 7 1 1 1 4 3 8 16 27 40 82
68 222 257 261 332 267 202 219 53 53 16 53 169 233 116 13 8 8 4 2 1 2 28 38 13 8 6 3 2 2 2 6 6 8 11 14
98 218 442 576 699 743 264 740 818 197 15 36 41 68 219 67 71 73 77 7 2 9 95 72 34 19 14 14 13 12 4 9 3 3 8 15
93 121 357 509 446 623 436 887 1167 613 40 9 13 39 439 242 135 139 119 10 3 21 27 141 97 73 54 79 51 24 3 2 24 50 31 46
233 139 192 324 293 242 232 425 539 489 251 7 16 85 153 129 57 66 84 16 1 32 50 113 109 86 59 66 61 12 0 52 88 217
287 273 316 486 576 477 435 181 192 271 179 23 82 244 199 134 25 27 43 35 19 33 60 60 60 47 36 34 63 43 24 27 6 45 70 174
120 144 145 154 153 180 244 196 180 167 69 45 148 211 153 55 19 18 17 16 16 19 21 18 18 14 13 9 6 16 26 33 28 28 18 28
1 2 4 5 5 5 3 4 4 8 7 6 3 1
150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 11. SATOB 701 - 1000 hPa vector mean wind. JUNE 2001
All observations
Arrows are plotted where greater than 10 obs are present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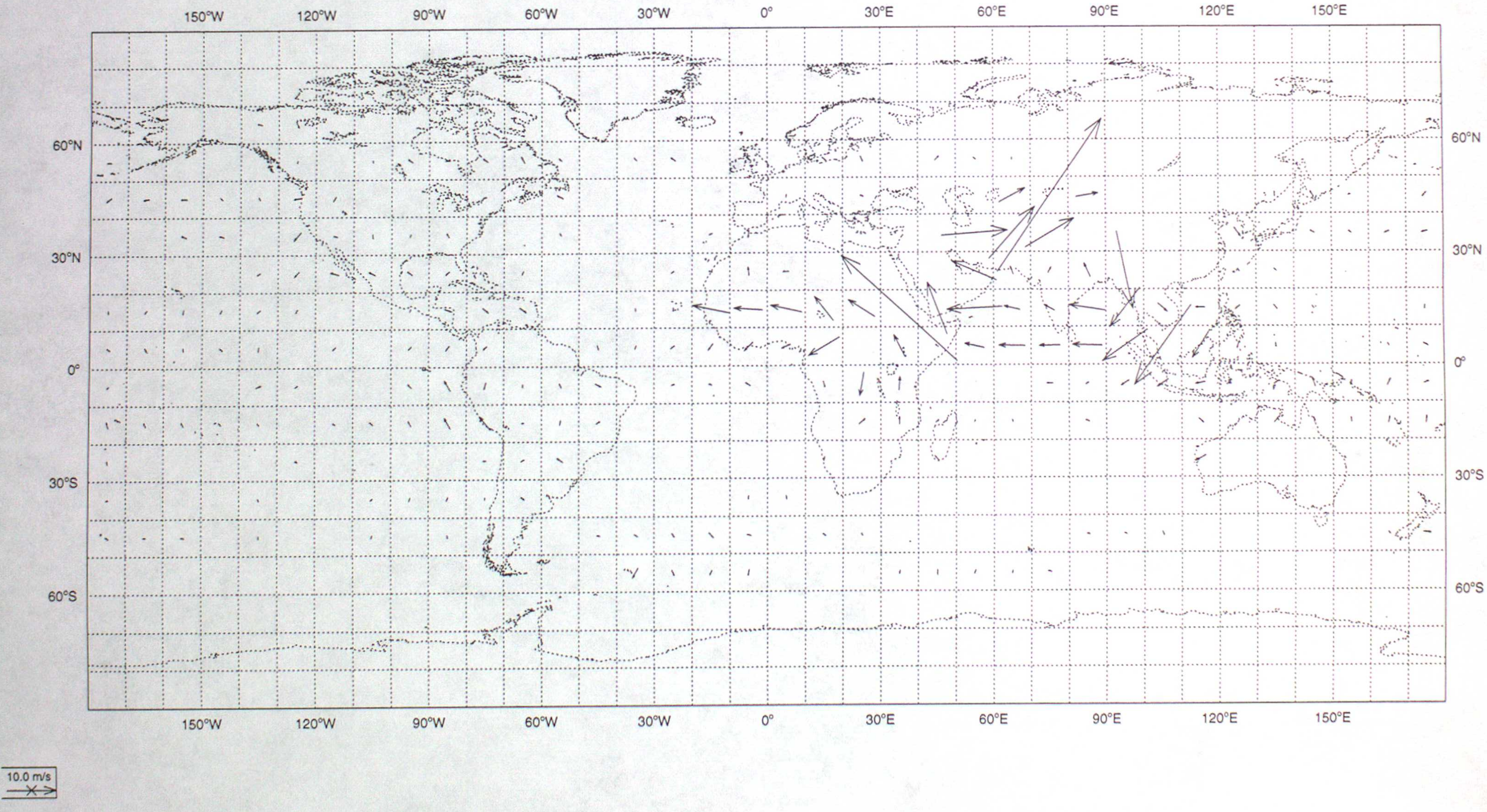
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 12. SATOB 701 - 1000 hPa vector wind differences. JUNE 2001
All observations
Arrows are plotted where greater than 10 obs are present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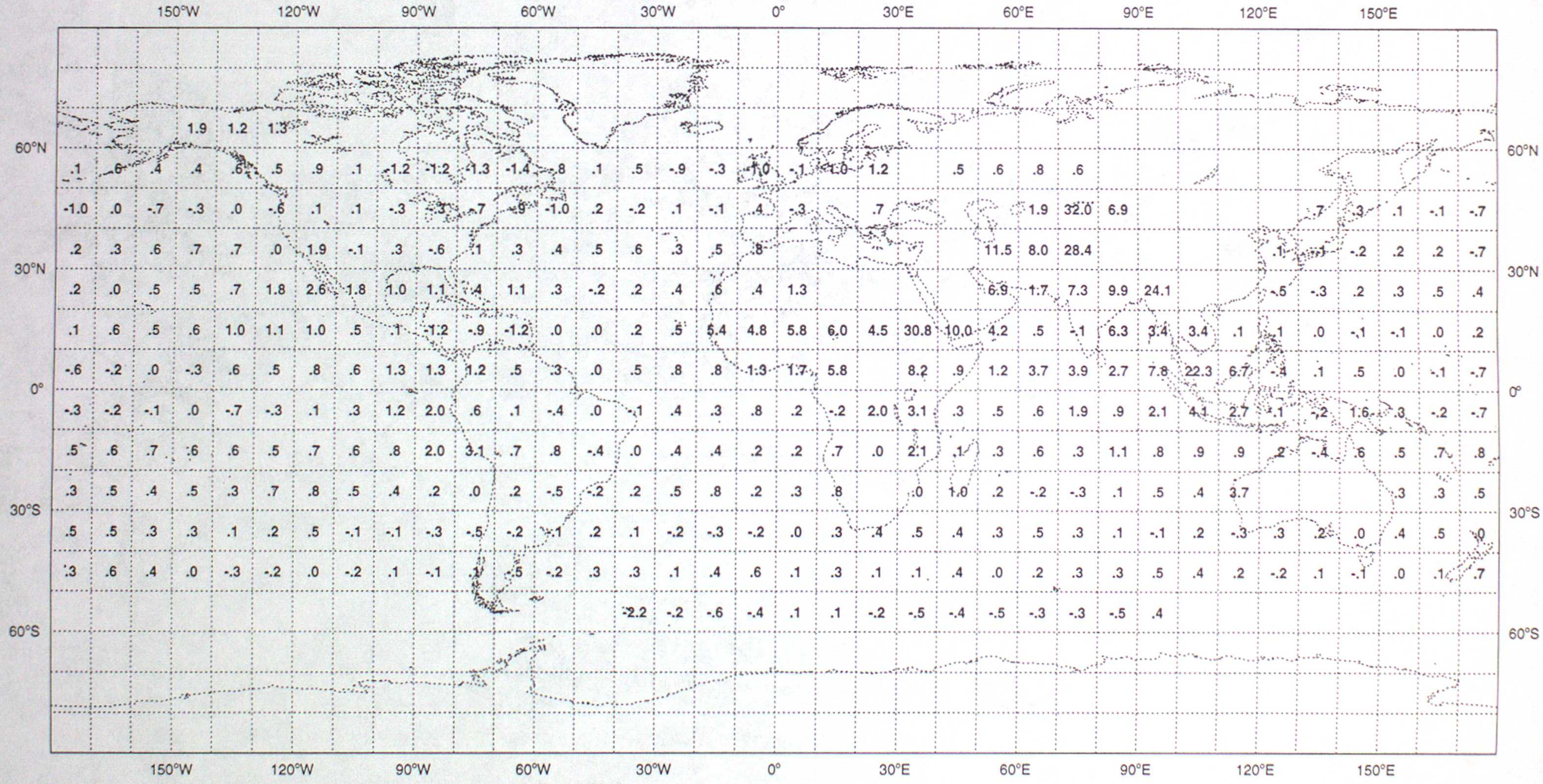
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). JUNE 2001

All observations

Values are plotted where greater than 10 obs are present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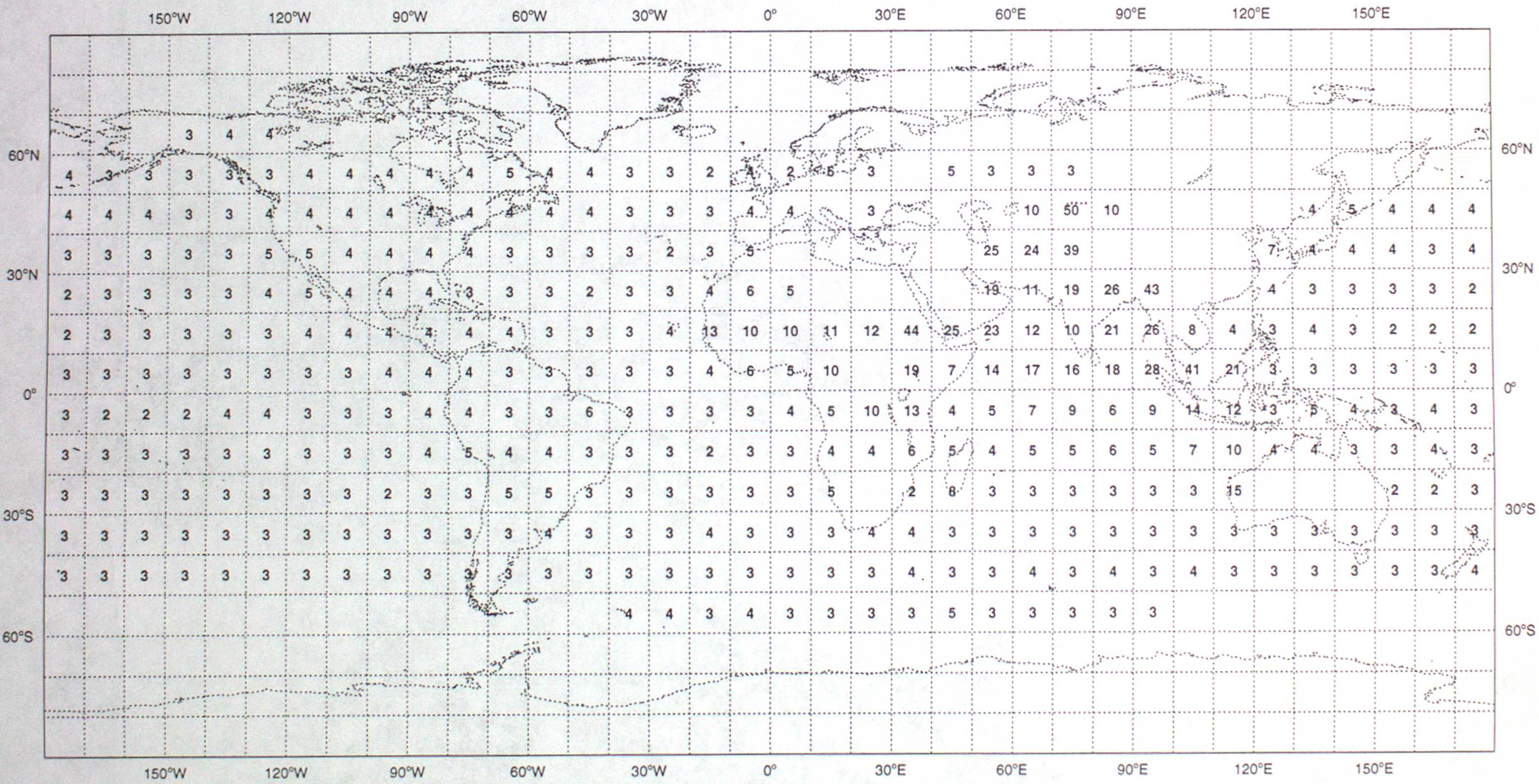
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
1.9 1.2 1.3
.1 .6 .4 .4 .6 .5 .9 .1 -1.2 -1.2 -1.3 -1.4 -.8 .1 .5 -.9 -.3 -1.0 -.1 -1.0 1.2 .5 .6 .8 .6
-1.0 .0 -.7 -.3 .0 -.6 .1 .1 -.3 -.3 -.7 -.9 -1.0 .2 -.2 .1 -.1 .4 -.3 .7 1.9 32.0 6.9 .7 .3 .1 -.1 -.7
.2 .3 .6 .7 .7 .0 1.9 -.1 .3 -.6 .1 .3 .4 .5 .6 .3 .5 .8 11.5 8.0 28.4 .1 -.1 -.2 .2 .2 -.7
.2 .0 .5 .5 .7 1.8 2.6 1.8 1.0 1.1 .4 1.1 .3 -.2 .2 .4 .6 .4 1.3 6.9 1.7 7.3 9.9 24.1 -.5 -.3 .2 .3 .5 .4
.1 .6 .5 .6 1.0 1.1 1.0 .5 .1 -1.2 -.9 -1.2 .0 .0 .2 .5 5.4 4.8 5.8 6.0 4.5 30.8 10.0 4.2 .5 -.1 6.3 3.4 3.4 .1 .1 .0 -.1 -.1 .0 .2
-.6 -.2 .0 -.3 .6 .5 .8 .6 1.3 1.3 1.2 .5 .3 .0 .5 .8 .8 -1.3 1.7 5.8 8.2 .9 1.2 3.7 3.9 2.7 7.8 22.3 6.7 -.4 .1 .5 .0 -.1 -.7
-.3 -.2 -.1 .0 -.7 -.3 .1 .3 1.2 2.0 .6 .1 -.4 .0 -.1 .4 .3 .8 .2 -.2 2.0 3.1 .3 .5 .6 1.9 .9 2.1 4.1 2.7 -.1 -.2 1.6 .3 -.2 -.7
.5 .6 .7 .6 .6 .5 .7 .6 .8 2.0 3.1 .7 .8 -.4 .0 .4 .4 .2 .2 .7 .0 2.1 .1 .3 .6 .3 1.1 .8 .9 .9 .2 -.4 .6 .5 .7 .8
.3 .5 .4 .5 .3 .7 .8 .5 .4 .2 .0 .2 -.5 -.2 .2 .5 .8 .2 .3 .8 .0 1.0 .2 -.2 -.3 .1 .5 .4 3.7 .3 .3 .5
.5 .5 .3 .3 .1 .2 .5 -.1 -.1 -.3 -.5 -.2 -.1 .2 .1 -.2 -.3 -.2 .0 .3 .4 .5 .4 .3 .5 .3 .1 -.1 .2 -.3 .3 .2 .0 .4 .5 .0
.3 .6 .4 .0 -.3 -.2 .0 -.2 .1 -.1 .1 -.5 -.2 .3 .3 .1 .4 .6 .1 .3 .1 .1 .4 .0 .2 .3 .3 .5 .4 .2 -.2 .1 -.1 .0 .1 .7
-2.2 -.2 -.6 -.4 .1 .1 -.2 -.5 -.4 -.5 -.3 -.3 -.5 .4

Figure 14. SATOB 701 - 1000 hPa RMS O-B vector differences (ms-1). JUNE 2001

All observations

Values are plotted where greater than 10 obs are present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30°S
60°S
3 4 4
4 3 3 3 3 3 4 4 4 4 4 5 4 4 3 3 2 4 2 5 3 5 3 3 3
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3 3 3 3 3 5 5 4 4 4 4 3 3 3 3 2 3 5 25 24 39 7 4 4 4 3 4
2 3 3 3 3 4 5 4 4 4 3 3 3 2 3 3 4 6 5 19 11 19 26 43 4 3 3 3 3 2
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3 3 3 3 3 3 3 3 4 4 4 3 3 3 3 3 4 6 5 10 19 7 14 17 16 18 28 41 21 3 3 3 3 3 3
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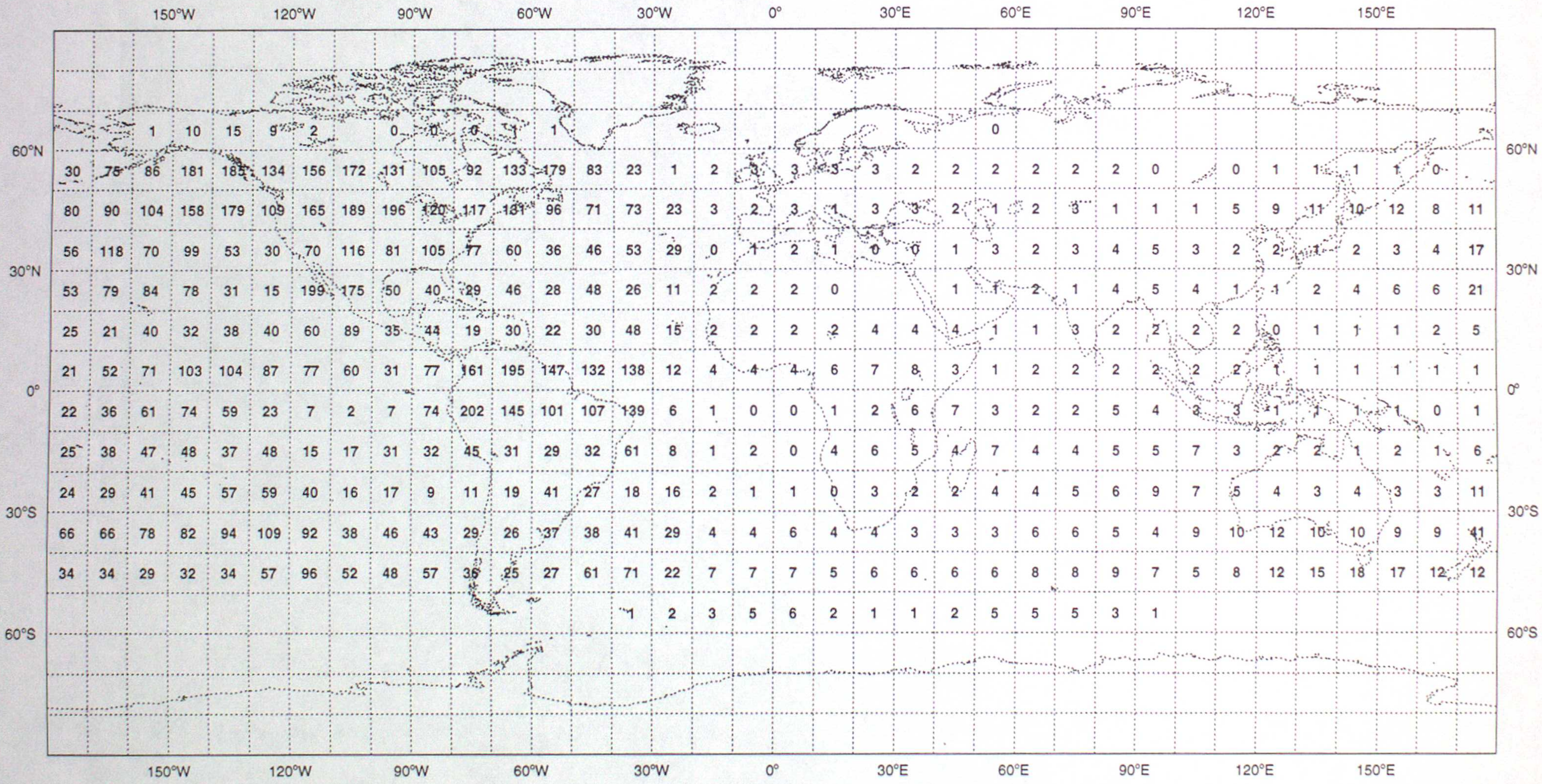
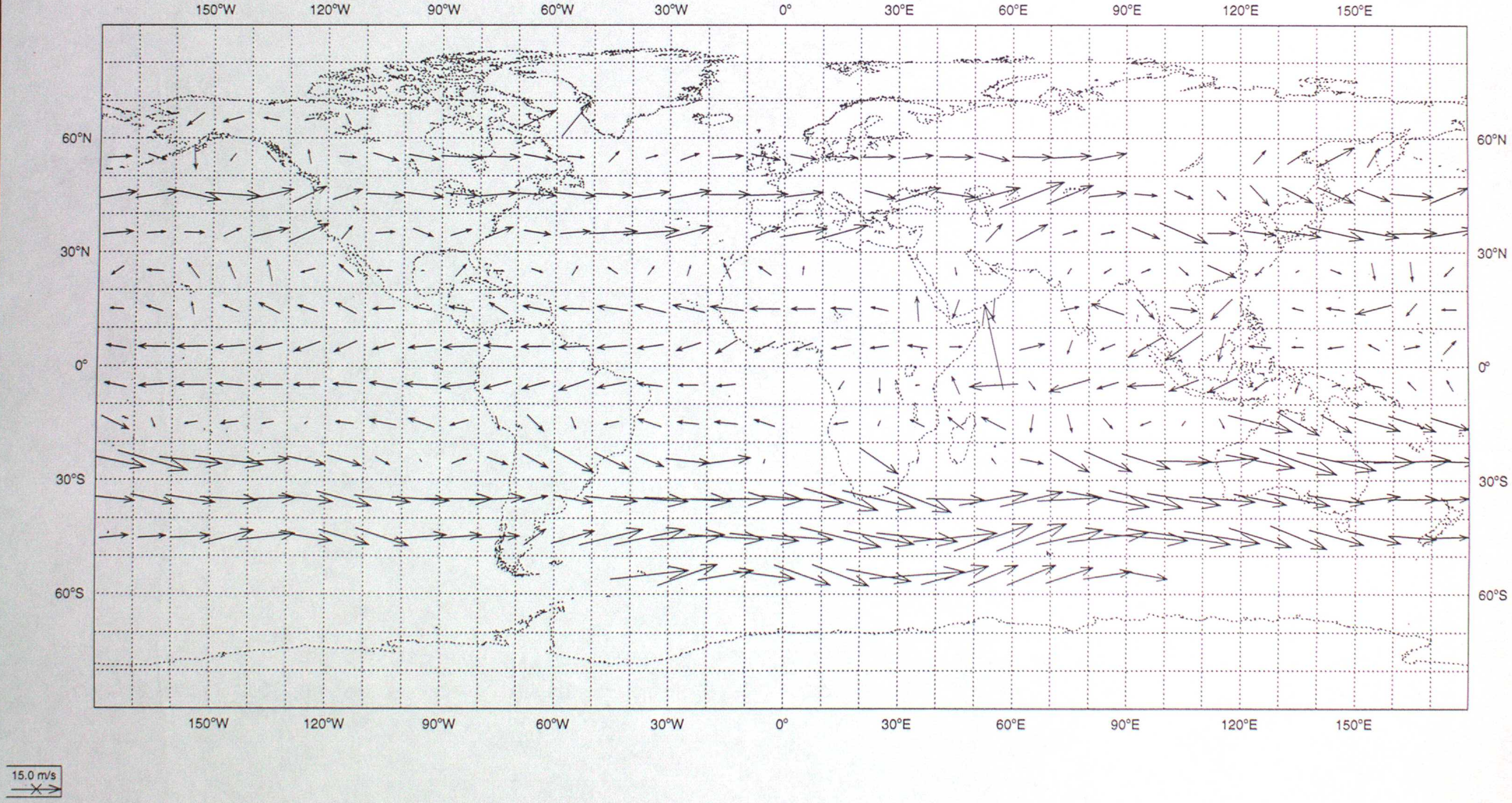
3 3 3 3 3 3 3 3 3 3 3 3 4 3 3 3 4 3 3 3 4 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 3 3 4 3 4 3 4 3 3 3 3 3 3 4
4 4 3 4 3 3 3 3 5 3 3 3 3 3

Figure 15. SATOB 401 - 700 hPa mean daily count. JUNE 2001
Global average number of observations in 24 hours = 12480



		1	10	15	9	2		0	0	0	1	1											0												
30	75	86	181	185	134	156	172	131	105	92	133	179	83	23	1	2	3	3	3	3	2	2	2	2	2	2	0		0	1	1	1	1	0	
80	90	104	158	179	109	165	189	196	120	117	131	96	71	73	23	3	2	3	1	3	3	2	1	2	3	1	1	1	5	9	11	10	12	8	11
56	118	70	99	53	30	70	116	81	105	77	60	36	46	53	29	0	1	2	1	0	0	1	3	2	3	4	5	3	2	2	1	2	3	4	17
53	79	84	78	31	15	199	175	50	40	29	46	28	48	26	11	2	2	2	0			1	1	2	1	4	5	4	1	1	2	4	6	6	21
25	21	40	32	38	40	60	89	35	44	19	30	22	30	48	15	2	2	2	2	4	4	4	1	1	3	2	2	2	2	0	1	1	1	2	5
21	52	71	103	104	87	77	60	31	77	161	195	147	132	138	12	4	4	4	6	7	8	3	1	2	2	2	2	2	2	1	1	1	1	1	1
22	36	61	74	59	23	7	2	7	74	202	145	101	107	139	6	1	0	0	1	2	6	7	3	2	2	5	4	3	3	1	1	1	1	0	1
25	38	47	48	37	48	15	17	31	32	45	31	29	32	61	8	1	2	0	4	6	5	4	7	4	4	5	5	7	3	2	2	1	2	1	6
24	29	41	45	57	59	40	16	17	9	11	19	41	27	18	16	2	1	1	0	3	2	2	4	4	5	6	9	7	5	4	3	4	3	3	11
66	66	78	82	94	109	92	38	46	43	29	26	37	38	41	29	4	4	6	4	4	3	3	3	6	6	5	4	9	10	12	10	10	9	9	41
34	34	29	32	34	57	96	52	48	57	36	25	27	61	71	22	7	7	7	5	6	6	6	6	8	8	9	7	5	8	12	15	18	17	12	12
														1	2	3	5	6	2	1	1	2	5	5	5	3	1								

Figure 16. SATOB 401 - 700 hPa vector mean wind. JUNE 2001
All observations
Arrows are plotted where greater than 10 obs are present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30°W
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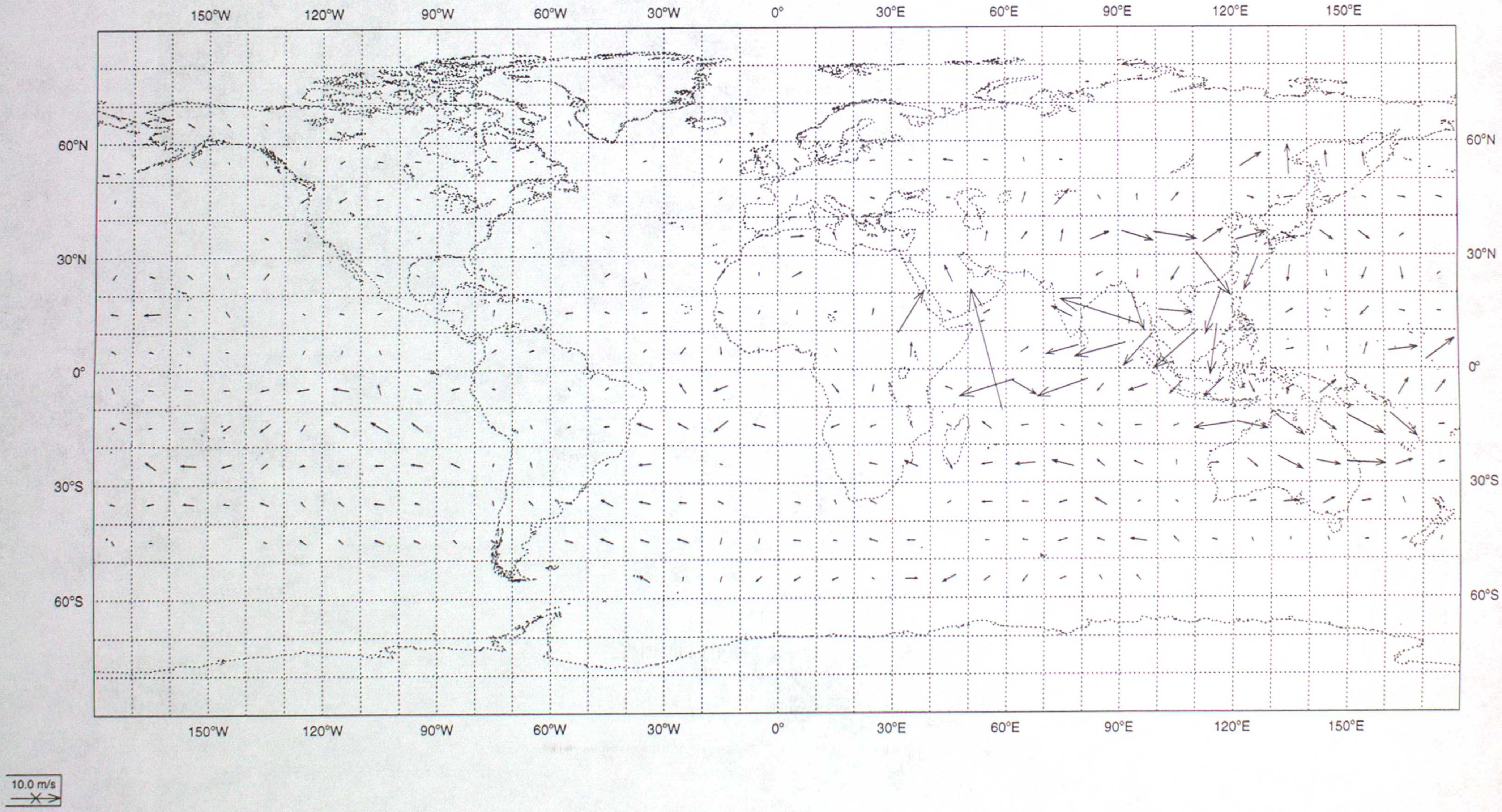
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 17. SATOB 401 - 700 hPa vector wind differences. JUNE 2001

All observations

Arrows are plotted where greater than 10 obs are present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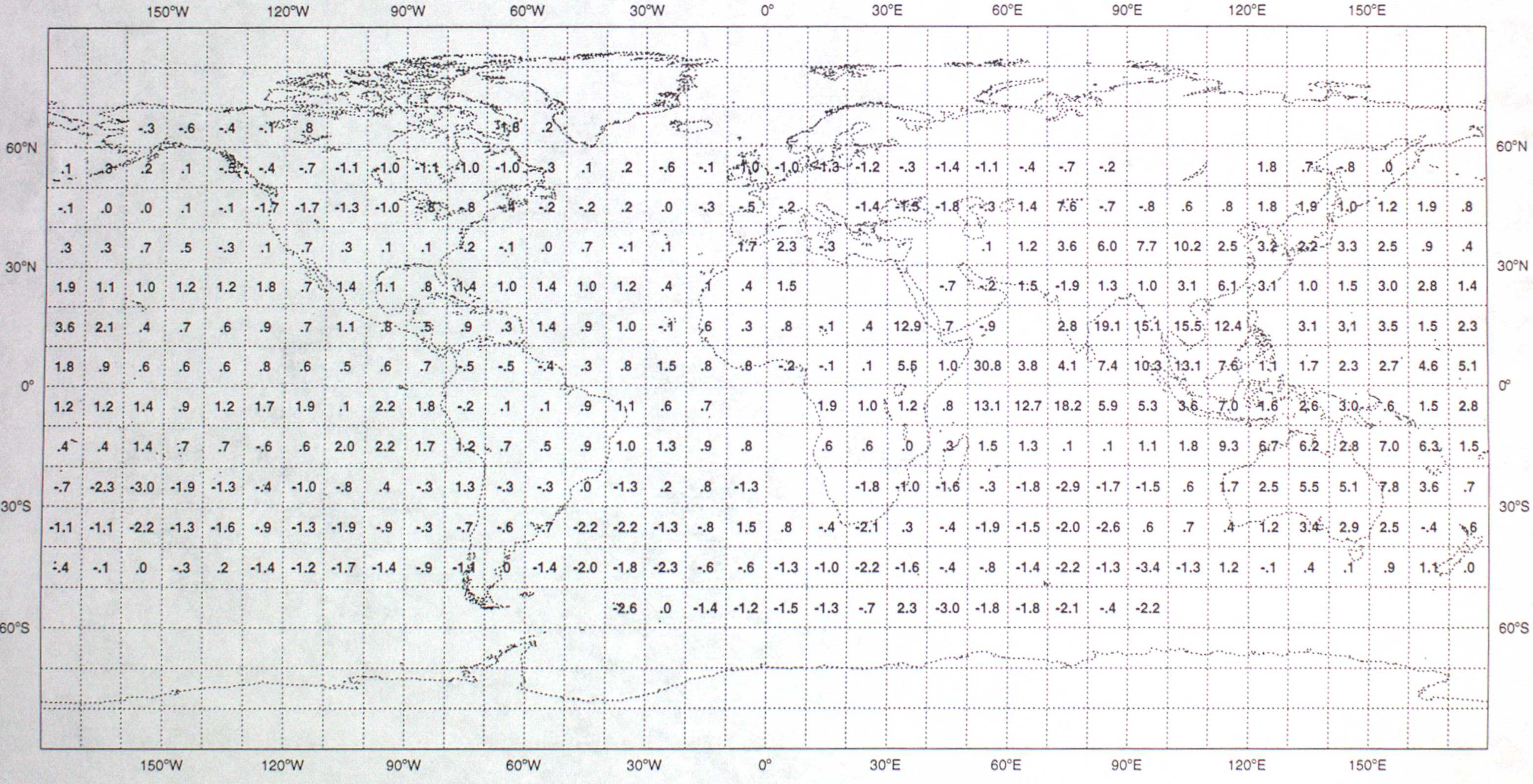
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). JUNE 2001

All observations

Values are plotted where greater than 10 obs are present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60°N 30°N 0° 30°S 60°S
-.3 -.6 -.4 -.1 .8 1.8 .2
.1 .3 .2 .1 -.5 -.4 -.7 -1.1 -1.0 -1.1 -1.0 -1.0 -.3 .1 .2 -.6 -.1 -1.0 -1.0 -1.3 -1.2 -.3 -1.4 -1.1 -.4 -.7 -.2 1.8 .7 -.8 .0
-.1 .0 .0 .1 -.1 -1.7 -1.7 -1.3 -1.0 -.8 -.8 -.4 -.2 -.2 .2 .0 -.3 -.5 -.2 -1.4 -1.5 -1.8 -.3 1.4 7.6 -.7 -.8 .6 .8 1.8 1.9 1.0 1.2 1.9 .8
.3 .3 .7 .5 -.3 .1 .7 .3 .1 .1 .2 -.1 .0 .7 -.1 .1 1.7 2.3 -.3 .1 1.2 3.6 6.0 7.7 10.2 2.5 3.2 2.2 3.3 2.5 .9 .4
1.9 1.1 1.0 1.2 1.2 1.8 .7 1.4 1.1 .8 1.4 1.0 1.4 1.0 1.2 .4 .1 .4 1.5 -.7 -.2 1.5 -1.9 1.3 1.0 3.1 6.1 3.1 1.0 1.5 3.0 2.8 1.4
3.6 2.1 .4 .7 .6 .9 .7 1.1 .8 .5 .9 .3 1.4 .9 1.0 -.1 .6 .3 .8 -.1 .4 12.9 .7 -.9 2.8 19.1 15.1 15.5 12.4 3.1 3.1 3.5 1.5 2.3
1.8 .9 .6 .6 .6 .8 .6 .5 .6 .7 -.5 -.5 -.4 .3 .8 1.5 .8 .8 -.2 -.1 .1 5.5 1.0 30.8 3.8 4.1 7.4 10.3 13.1 7.6 1.1 1.7 2.3 2.7 4.6 5.1
1.2 1.2 1.4 .9 1.2 1.7 1.9 .1 2.2 1.8 -.2 .1 .1 .9 1.1 .6 .7 1.9 1.0 1.2 .8 13.1 12.7 18.2 5.9 5.3 3.6 7.0 1.6 2.6 3.0 .6 1.5 2.8
.4 .4 1.4 .7 .7 -.6 .6 2.0 2.2 1.7 1.2 .7 .5 .9 1.0 1.3 .9 .8 .6 .6 .0 .3 1.5 1.3 .1 .1 1.1 1.8 9.3 6.7 6.2 2.8 7.0 6.3 1.5
-.7 -2.3 -3.0 -1.9 -1.3 -.4 -1.0 -.8 .4 -.3 1.3 -.3 -.3 .0 -1.3 .2 .8 -1.3 -1.8 -1.0 -1.6 -.3 -1.8 -2.9 -1.7 -1.5 .6 1.7 2.5 5.5 5.1 7.8 3.6 .7
-1.1 -1.1 -2.2 -1.3 -1.6 -.9 -1.3 -1.9 -.9 -.3 -.7 -.6 -.7 -2.2 -2.2 -1.3 -.8 1.5 .8 -.4 -2.1 .3 -.4 -1.9 -1.5 -2.0 -2.6 .6 .7 .4 1.2 3.4 2.9 2.5 -.4 .6
-.4 -.1 .0 -.3 .2 -1.4 -1.2 -1.7 -1.4 -.9 -1.1 .0 -1.4 -2.0 -1.8 -2.3 -.6 -.6 -1.3 -1.0 -2.2 -1.6 -.4 -.8 -1.4 -2.2 -1.3 -3.4 -1.3 1.2 -.1 .4 .1 .9 1.1 .0
-2.6 .0 -1.4 -1.2 -1.5 -1.3 -.7 2.3 -3.0 -1.8 -1.8 -2.1 -.4 -2.2

Figure 19. SATOB 401 - 700 hPa RMS O-B vector differences (ms-1). JUNE 2001

All observations

Values are plotted where greater than 10 obs are present

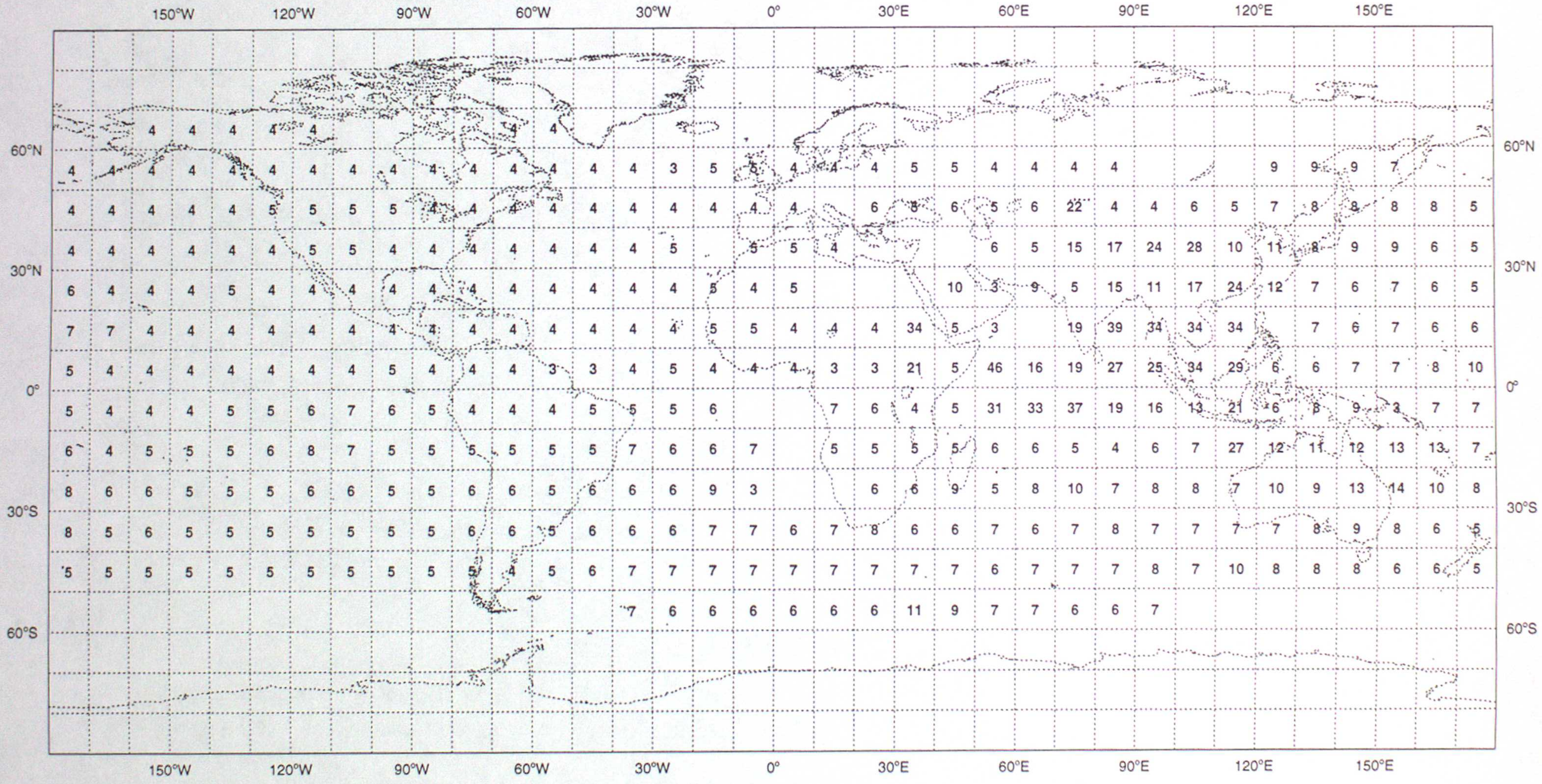
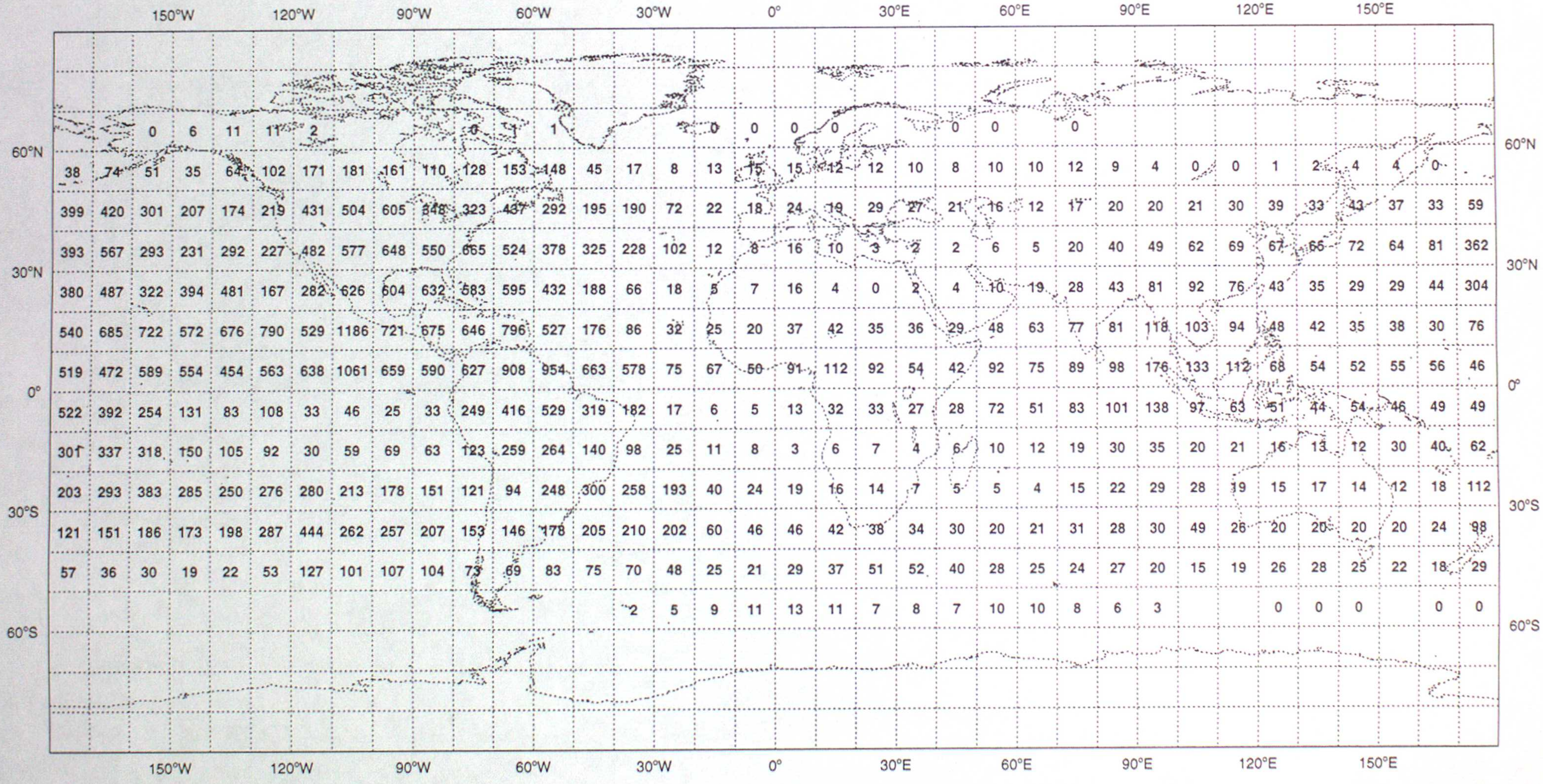

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
4 4 4 4 4 4 4
4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 3 5 5 4 4 4 5 5 4 4 4 4 9 9 9 7
4 4 4 4 4 5 5 5 5 4 4 4 4 4 4 4 4 4 4 6 8 6 5 6 22 4 4 6 5 7 8 8 8 8 5
4 4 4 4 4 4 5 5 4 4 4 4 4 4 4 5 5 5 4 6 5 15 17 24 28 10 11 8 9 9 6 5
6 4 4 4 5 4 4 4 4 4 4 4 4 4 4 4 5 4 5 10 3 9 5 15 11 17 24 12 7 6 7 6 5
7 7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 5 5 4 4 4 34 5 3 19 39 34 34 34 7 6 7 6 6
5 4 4 4 4 4 4 4 5 4 4 4 3 3 4 5 4 4 4 3 3 21 5 46 16 19 27 25 34 29 6 6 7 7 8 10
5 4 4 4 5 5 6 7 6 5 4 4 4 5 5 5 6 7 6 4 5 31 33 37 19 16 13 21 6 8 9 3 7 7
6 4 5 5 5 6 8 7 5 5 5 5 5 5 7 6 6 7 5 5 5 5 6 6 5 4 6 7 27 12 11 12 13 13 7
8 6 6 5 5 5 6 6 5 5 6 6 5 6 6 6 9 3 6 6 9 5 8 10 7 8 8 7 10 9 13 14 10 8
8 5 6 5 5 5 5 5 5 5 6 6 5 6 6 6 7 7 6 7 8 6 6 7 6 7 8 7 7 7 7 8 9 8 6 5
5 5 5 5 5 5 5 5 5 5 5 4 5 6 7 7 7 7 7 7 7 7 7 6 7 7 7 8 7 10 8 8 8 6 6 5
7 6 6 6 6 6 6 11 9 7 7 6 6 7

Figure 20. SATOB 101 - 400 hPa mean daily count. JUNE 2001
Global average number of observations in 24 hours = 61063



		0	6	11	11	2				0	1	1				0	0	0	0			0	0		0										
38	74	51	35	64	102	171	181	161	110	128	153	148	45	17	8	13	15	15	12	12	10	8	10	10	12	9	4	0	0	1	2	4	4	0	
399	420	301	207	174	219	431	504	605	848	323	437	292	195	190	72	22	18	24	19	29	27	21	16	12	17	20	20	21	30	39	33	43	37	33	59
393	567	293	231	292	227	482	577	648	550	665	524	378	325	228	102	12	8	16	10	3	2	2	6	5	20	40	49	62	69	67	65	72	64	81	362
380	487	322	394	481	167	282	626	604	632	583	595	432	188	66	18	5	7	16	4	0	2	4	10	19	28	43	81	92	76	43	35	29	29	44	304
540	685	722	572	676	790	529	1186	721	675	646	796	527	176	86	32	25	20	37	42	35	36	29	48	63	77	81	118	103	94	48	42	35	38	30	76
519	472	589	554	454	563	638	1061	659	590	627	908	954	663	578	75	67	50	91	112	92	54	42	92	75	89	98	176	133	112	68	54	52	55	56	46
522	392	254	131	83	108	33	46	25	33	249	416	529	319	182	17	6	5	13	32	33	27	28	72	51	83	101	138	97	63	51	44	54	46	49	49
301	337	318	150	105	92	30	59	69	63	123	259	264	140	98	25	11	8	3	6	7	4	6	10	12	19	30	35	20	21	16	13	12	30	40	62
203	293	383	285	250	276	280	213	178	151	121	94	248	300	258	193	40	24	19	16	14	7	5	5	4	15	22	29	28	19	15	17	14	12	18	112
121	151	186	173	198	287	444	262	257	207	153	146	178	205	210	202	60	46	46	42	38	34	30	20	21	31	28	30	49	26	20	20	20	20	24	98
57	36	30	19	22	53	127	101	107	104	73	69	83	75	70	48	25	21	29	37	51	52	40	28	25	24	27	20	15	19	26	28	25	22	18	29
														2	5	9	11	13	11	7	8	7	10	10	8	6	3			0	0	0		0	0

Figure 21. SATOB 101 - 400 hPa vector mean wind. JUNE 2001

All observations

Arrows are plotted where greater than 10 obs are present

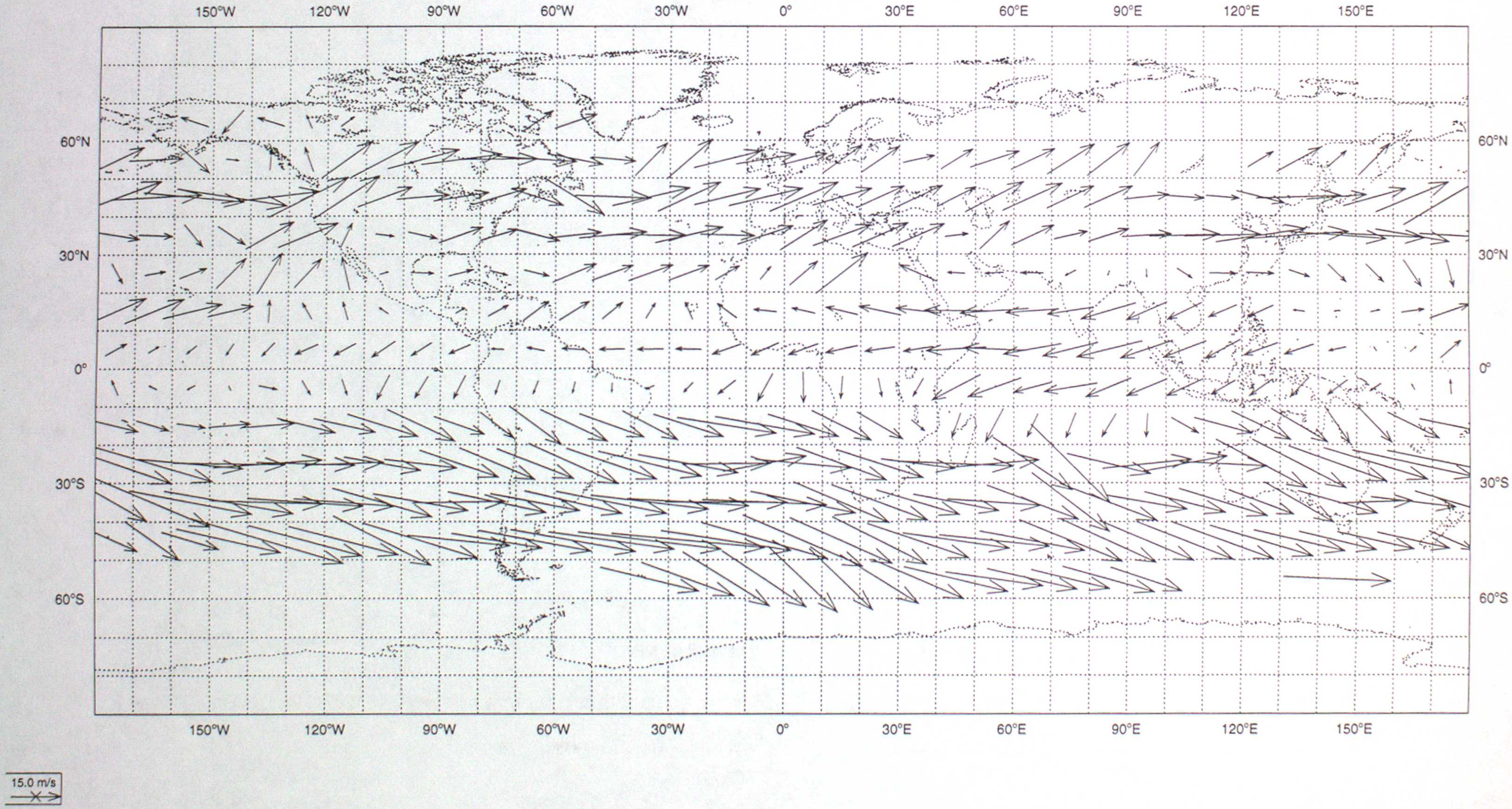

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 22. SATOB 101 - 400 hPa vector wind differences. JUNE 2001

All observations

Arrows are plotted where greater than 10 obs are present

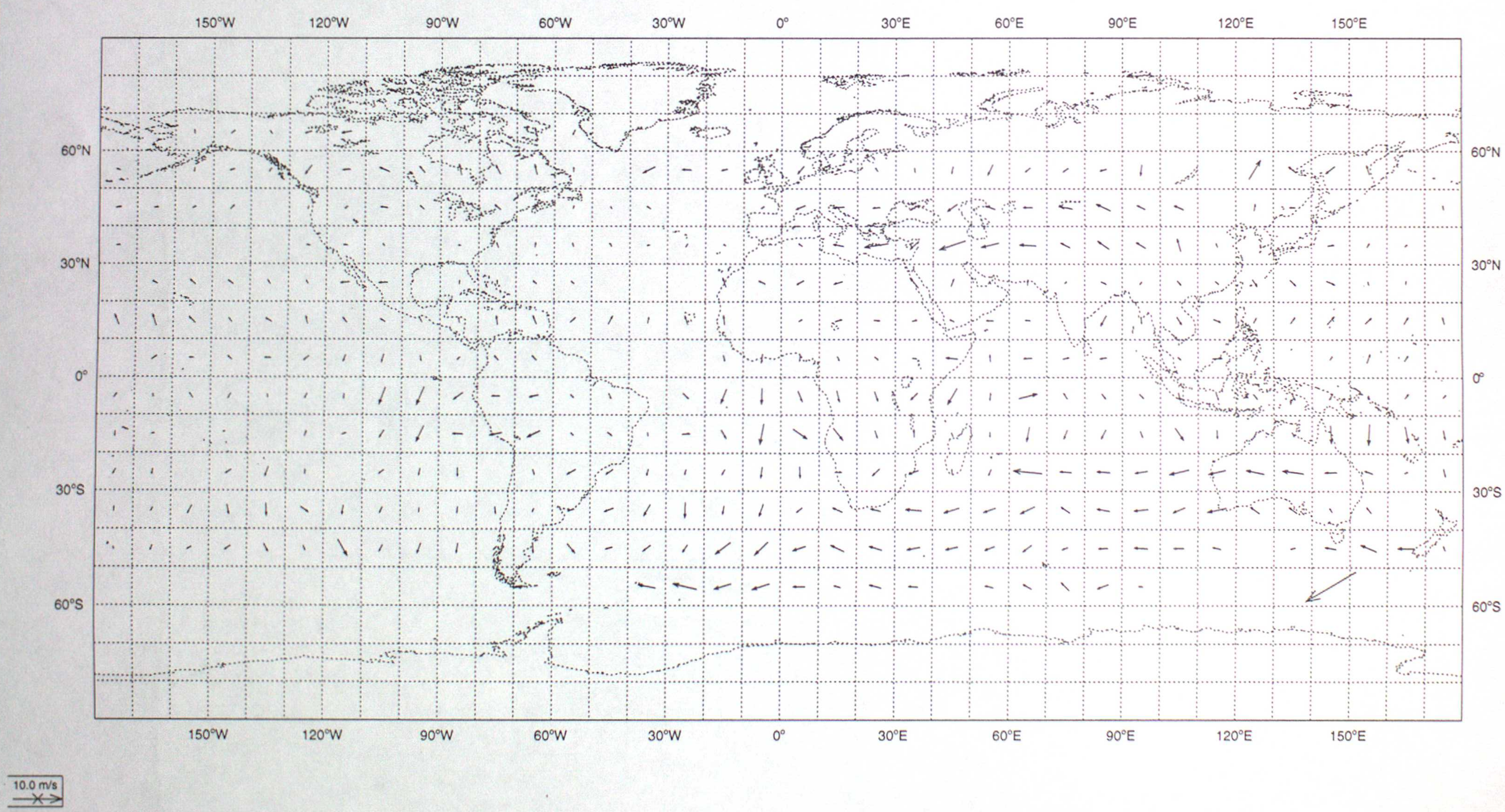

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). JUNE 2001

All observations

Values are plotted where greater than 10 obs are present

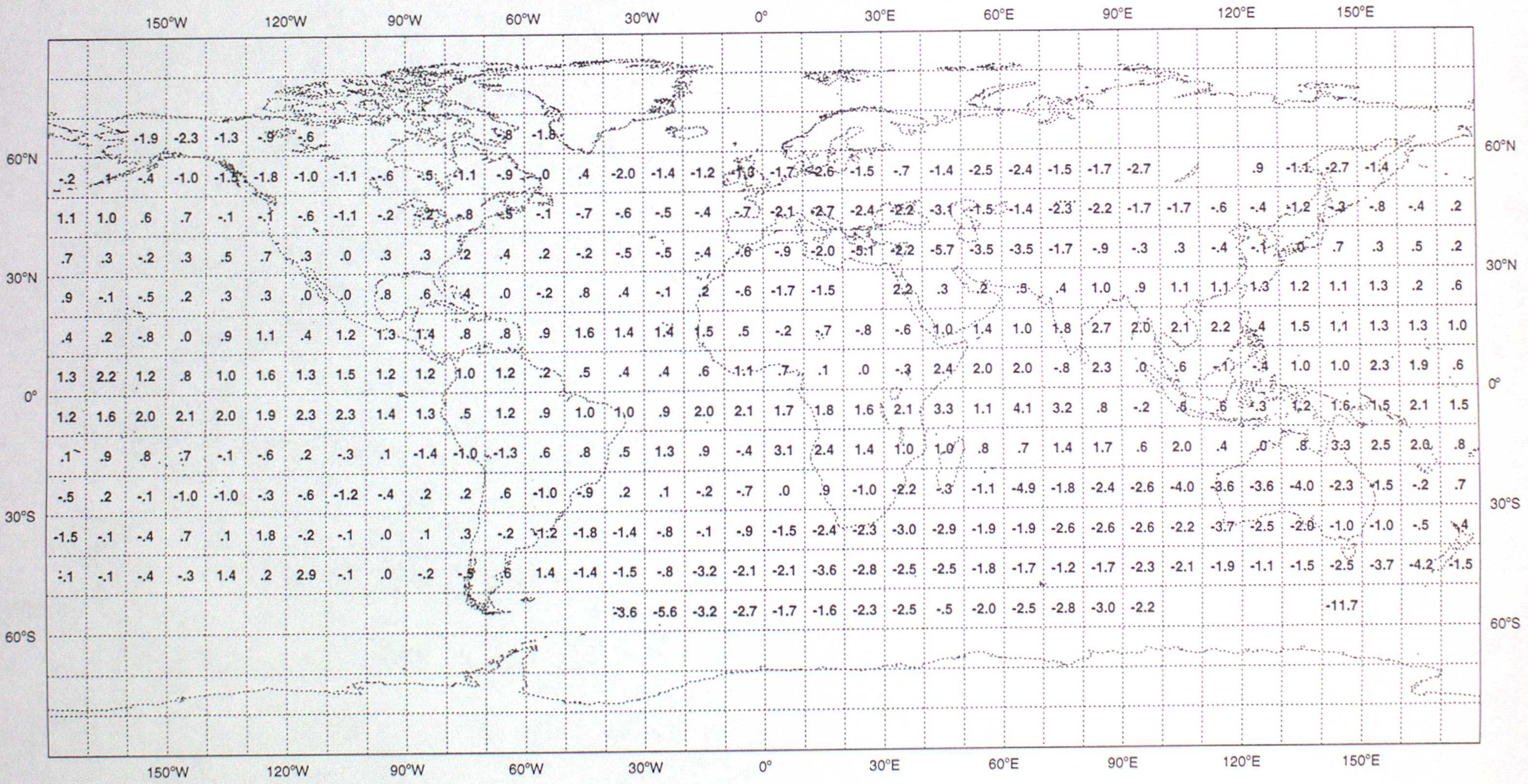
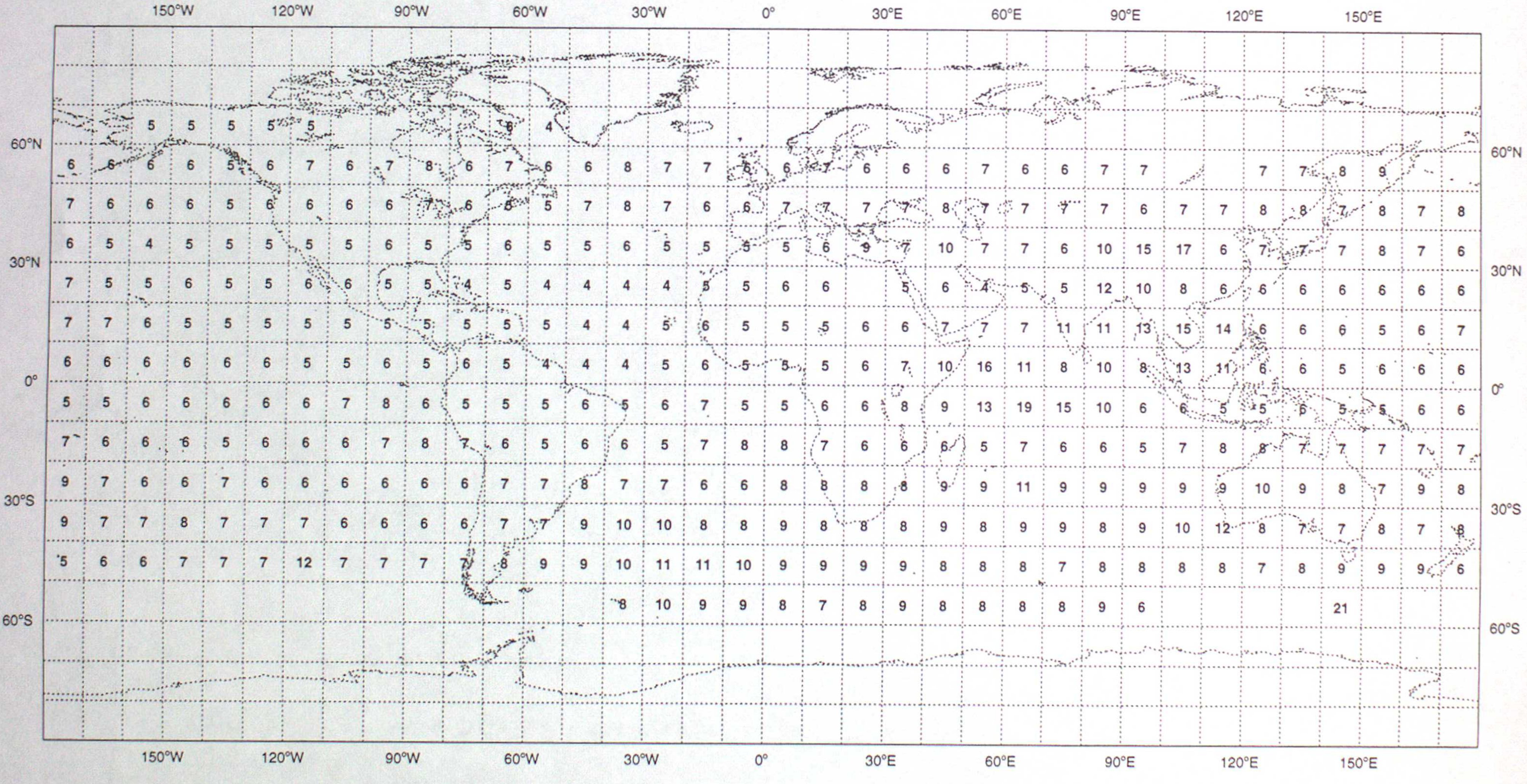

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-1.9 -2.3 -1.3 -.9 -.6 -.8 -1.8
-.2 -.4 -1.0 -1.5 -1.8 -1.0 -1.1 -.6 -.5 -1.1 -.9 .0 .4 -2.0 -1.4 -1.2 -1.3 -1.7 -2.6 -1.5 -.7 -1.4 -2.5 -2.4 -1.5 -1.7 -2.7 .9 -1.1 -2.7 -1.4
1.1 1.0 .6 .7 -.1 -.1 -.6 -1.1 -.2 -.2 -.8 -.5 -.1 -.7 -.6 -.5 -.4 -.7 -2.1 -2.7 -2.4 -2.2 -3.1 -1.5 -1.4 -2.3 -2.2 -1.7 -1.7 -.6 -.4 -1.2 -.3 -.8 -.4 .2
.7 .3 -.2 .3 .5 .7 .3 .0 .3 .3 .2 .4 .2 -.2 -.5 -.5 -.4 -.6 -.9 -2.0 -5.1 -2.2 -5.7 -3.5 -3.5 -1.7 -.9 -.3 .3 -.4 -.1 .0 .7 .3 .5 .2
.9 -.1 -.5 .2 .3 .3 .0 .0 .8 .6 .4 .0 -.2 .8 .4 -.1 .2 -.6 -1.7 -1.5 2.2 .3 .2 .5 .4 1.0 .9 1.1 1.1 1.3 1.2 1.1 1.3 .2 .6
.4 .2 -.8 .0 .9 1.1 .4 1.2 1.3 1.4 .8 .8 .9 1.6 1.4 1.4 1.5 .5 -.2 .7 -.8 -.6 1.0 1.4 1.0 1.8 2.7 2.0 2.1 2.2 .4 1.5 1.1 1.3 1.3 1.0
1.3 2.2 1.2 .8 1.0 1.6 1.3 1.5 1.2 1.2 1.0 1.2 .2 .5 .4 .4 .6 1.1 .7 .1 .0 -.3 2.4 2.0 2.0 -.8 2.3 .0 .6 -.1 .4 1.0 1.0 2.3 1.9 .6
1.2 1.6 2.0 2.1 2.0 1.9 2.3 2.3 1.4 1.3 .5 1.2 .9 1.0 1.0 .9 2.0 2.1 1.7 1.8 1.6 2.1 3.3 1.1 4.1 3.2 .8 -.2 .6 .6 .3 1.2 1.6 1.5 2.1 1.5
.1 .9 .8 .7 -.1 -.6 .2 -.3 .1 -1.4 -1.0 -1.3 .6 .8 .5 1.3 .9 -.4 3.1 2.4 1.4 1.0 1.0 .8 .7 1.4 1.7 .6 2.0 .4 .0 .8 3.3 2.5 2.0 .8
-.5 .2 -.1 -1.0 -1.0 -.3 -.6 -1.2 -.4 .2 .2 .6 -1.0 -.9 .2 .1 -.2 -.7 .0 .9 -1.0 -2.2 -.3 -1.1 -4.9 -1.8 -2.4 -2.6 -4.0 -3.6 -3.6 -4.0 -2.3 -1.5 -.2 .7
-1.5 -.1 -.4 .7 .1 1.8 -.2 -.1 .0 .1 .3 -.2 -1.2 -1.8 -1.4 -.8 -.1 -.9 -1.5 -2.4 -2.3 -3.0 -2.9 -1.9 -1.9 -2.6 -2.6 -2.6 -2.2 -3.7 -2.5 -2.0 -1.0 -1.0 -.5 .4
-.1 -.1 -.4 -.3 1.4 .2 2.9 -.1 .0 -.2 -.5 .6 1.4 -1.4 -1.5 -.8 -3.2 -2.1 -2.1 -3.6 -2.8 -2.5 -2.5 -1.8 -1.7 -1.2 -1.7 -2.3 -2.1 -1.9 -1.1 -1.5 -2.5 -3.7 -4.2 -1.5
-3.6 -5.6 -3.2 -2.7 -1.7 -1.6 -2.3 -2.5 -.5 -2.0 -2.5 -2.8 -3.0 -2.2 -11.7

Figure 24. SATOB 101 - 400 hPa RMS O-B vector differences (ms-1). JUNE 2001
All observations
Values are plotted where greater than 10 obs are present


150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
5 5 5 5 5 6 4
6 6 6 6 5 6 7 6 7 8 6 7 6 6 8 7 7 6 6 7 6 6 6 7 6 6 7 7 7 7 8 9
7 6 6 6 5 6 6 6 6 7 6 6 5 7 8 7 6 6 7 7 7 7 8 7 7 7 7 6 7 7 8 8 7 8 7 8
6 5 4 5 5 5 5 5 6 5 5 6 5 5 6 5 5 5 5 6 9 7 10 7 7 6 10 15 17 6 7 7 7 8 7 6
7 5 5 6 5 5 6 6 5 5 4 5 4 4 4 4 5 5 6 6 5 6 4 5 5 12 10 8 6 6 6 6 6 6 6
7 7 6 5 5 5 5 5 5 5 5 5 5 4 4 5 6 5 5 5 6 6 7 7 7 11 11 13 15 14 6 6 6 5 6 7
6 6 6 6 6 6 5 5 6 5 6 5 4 4 4 5 6 5 5 5 6 7 10 16 11 8 10 8 13 11 6 6 5 6 6 6
5 5 6 6 6 6 6 7 8 6 5 5 5 6 5 6 7 5 5 6 6 8 9 13 19 15 10 6 6 5 5 5 5 5 6 6
7 6 6 6 5 6 6 6 7 8 7 6 5 6 6 5 7 8 8 7 6 6 6 5 7 6 6 5 7 8 8 7 7 7 7 7
9 7 6 6 7 6 6 6 6 6 6 7 7 8 7 7 6 6 8 8 8 8 9 9 11 9 9 9 9 9 10 9 8 7 9 8
9 7 7 8 7 7 7 6 6 6 6 7 7 9 10 10 8 8 9 8 8 8 9 8 9 9 8 9 10 12 8 7 7 8 7 8
5 6 6 7 7 7 12 7 7 7 7 8 9 9 10 11 11 10 9 9 9 9 8 8 8 7 8 8 8 8 7 8 9 9 9 6
8 10 9 9 8 7 8 9 8 8 8 8 9 6 21
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: June 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15 and NOAA-16.

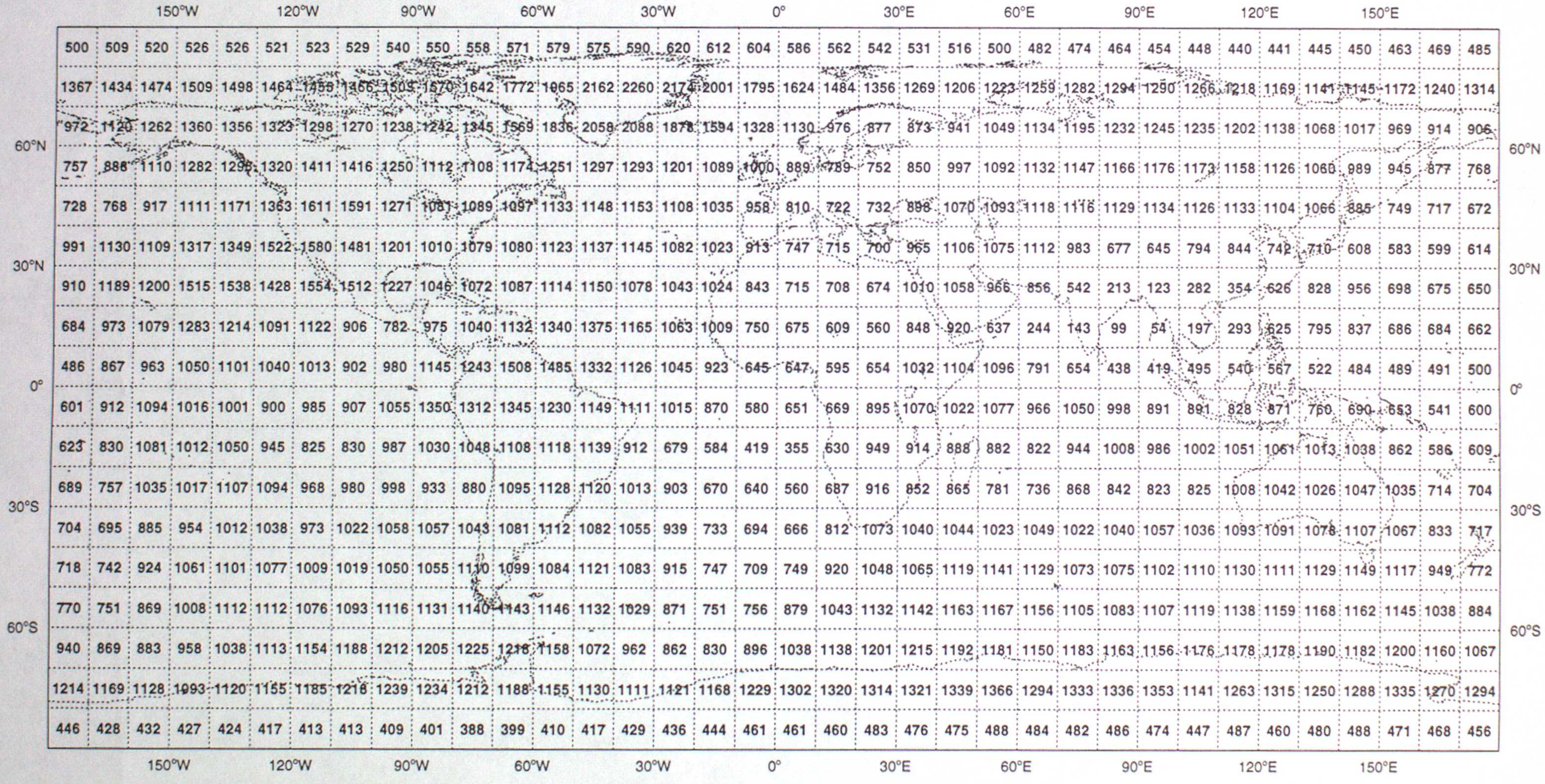
Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)
HIRS8 (Surface)
HIRS15 (700)
HIRS11 (500-700)
HIRS4 (400)
AMSUA5 (700)
AMSUA7 (300)
AMSUA9 (100)

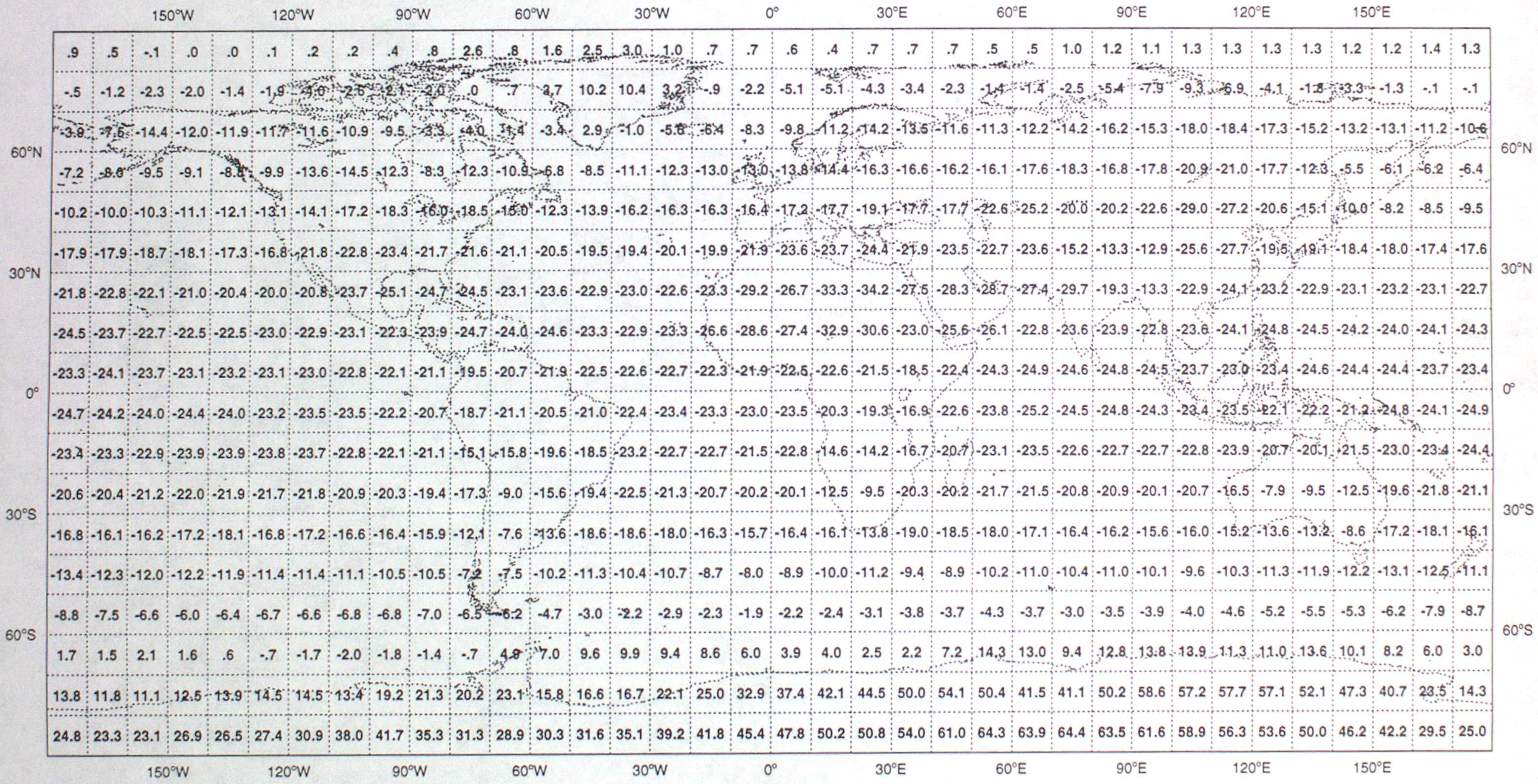
:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. JUNE 2001
NOAA15, using all observations
Global average number of observations in 24 hours = 629613



500	509	520	526	526	521	523	529	540	550	558	571	579	575	590	620	612	604	586	562	542	531	516	500	482	474	464	454	448	440	441	445	450	463	469	485
1367	1434	1474	1509	1498	1464	1455	1466	1505	1570	1642	1772	1965	2162	2260	2174	2001	1795	1624	1484	1356	1269	1206	1223	1259	1282	1294	1290	1266	1218	1169	1141	1145	1172	1240	1314
972	1120	1262	1360	1356	1323	1298	1270	1238	1242	1345	1569	1836	2058	2088	1878	1594	1328	1130	976	877	873	941	1049	1134	1195	1232	1245	1235	1202	1138	1068	1017	969	914	906
757	888	1110	1282	1295	1320	1411	1416	1250	1112	1108	1174	1251	1297	1293	1201	1089	1000	889	789	752	850	997	1092	1132	1147	1166	1176	1173	1158	1126	1060	989	945	877	768
728	768	917	1111	1171	1363	1611	1591	1271	1081	1089	1097	1133	1148	1153	1108	1035	958	810	722	732	898	1070	1093	1118	1116	1129	1134	1126	1133	1104	1066	885	749	717	672
991	1130	1109	1317	1349	1522	1580	1481	1201	1010	1079	1080	1123	1137	1145	1082	1023	913	747	715	700	965	1106	1075	1112	983	677	645	794	844	742	710	608	583	599	614
910	1189	1200	1515	1538	1428	1554	1512	1227	1046	1072	1087	1114	1150	1078	1043	1024	843	715	708	674	1010	1058	966	856	542	213	123	282	354	626	828	956	698	675	650
684	973	1079	1283	1214	1091	1122	906	782	975	1040	1132	1340	1375	1165	1063	1009	750	675	609	560	848	920	637	244	143	99	54	197	293	625	795	837	686	684	662
486	867	963	1050	1101	1040	1013	902	980	1145	1243	1508	1485	1332	1126	1045	923	645	647	595	654	1032	1104	1096	791	654	438	419	495	540	567	522	484	489	491	500
601	912	1094	1016	1001	900	985	907	1055	1350	1312	1345	1230	1149	1111	1015	870	580	651	669	895	1070	1022	1077	966	1050	998	891	891	828	871	760	690	653	541	600
623	830	1081	1012	1050	945	825	830	987	1030	1048	1108	1118	1139	912	679	584	419	355	630	949	914	888	882	822	944	1008	986	1002	1051	1061	1013	1038	862	586	609
689	757	1035	1017	1107	1094	968	980	998	933	880	1095	1128	1120	1013	903	670	640	560	687	916	852	865	781	736	868	842	823	825	1008	1042	1026	1047	1035	714	704
704	695	885	954	1012	1038	973	1022	1058	1057	1043	1081	1112	1082	1055	939	733	694	666	812	1073	1040	1044	1023	1049	1022	1040	1057	1036	1093	1091	1078	1107	1067	833	717
718	742	924	1061	1101	1077	1009	1019	1050	1055	1110	1099	1084	1121	1083	915	747	709	749	920	1048	1065	1119	1141	1129	1073	1075	1102	1110	1130	1111	1129	1149	1117	949	772
770	751	869	1008	1112	1112	1076	1093	1116	1131	1140	1143	1146	1132	1029	871	751	756	879	1043	1132	1142	1163	1167	1156	1105	1083	1107	1119	1138	1159	1168	1162	1145	1038	884
940	869	883	958	1038	1113	1154	1188	1212	1205	1225	1218	1158	1072	962	862	830	896	1038	1138	1201	1215	1192	1181	1150	1183	1163	1156	1176	1178	1178	1190	1182	1200	1160	1067
1214	1169	1128	1093	1120	1155	1185	1218	1239	1234	1212	1188	1155	1130	1111	1121	1168	1229	1302	1320	1314	1321	1339	1366	1294	1333	1336	1353	1141	1263	1315	1250	1288	1335	1270	1294
446	428	432	427	424	417	413	413	409	401	388	399	410	417	429	436	444	461	461	460	483	476	475	488	484	482	486	474	447	487	460	480	488	471	468	456

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: HIRS8 (Surface)
NOAA15, using all observations

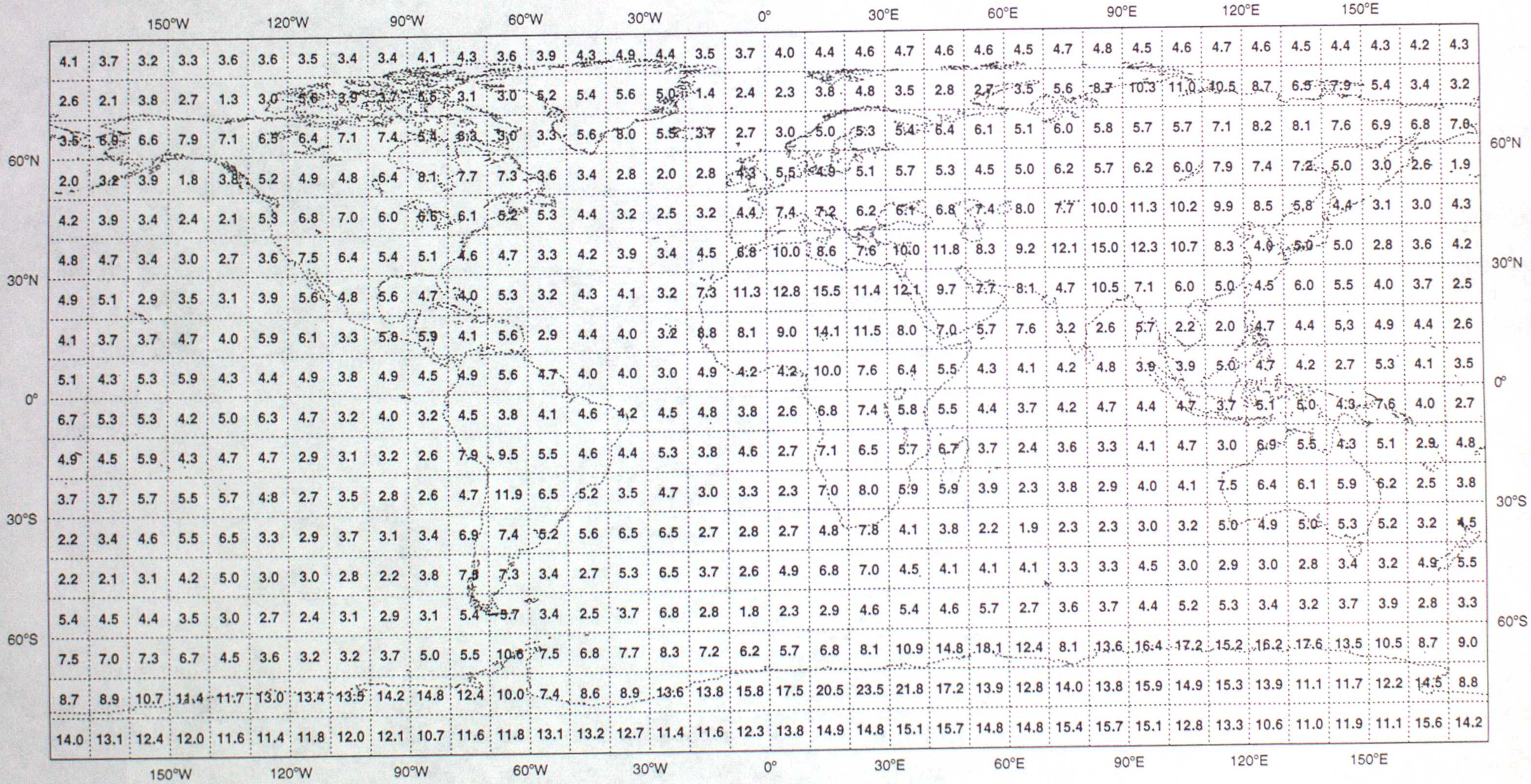


.9	.5	-.1	.0	.0	.1	.2	.2	.4	.8	2.6	.8	1.6	2.5	3.0	1.0	.7	.7	.6	.4	.7	.7	.7	.5	.5	1.0	1.2	1.1	1.3	1.3	1.3	1.3	1.2	1.2	1.4	1.3
-.5	-1.2	-2.3	-2.0	-1.4	-1.9	-4.0	-2.6	-2.1	-2.0	.0	.7	3.7	10.2	10.4	3.2	-.9	-2.2	-5.1	-5.1	-4.3	-3.4	-2.3	-1.4	-1.4	-2.5	-5.4	-7.9	-9.3	-6.9	-4.1	-1.8	-3.3	-1.3	-.1	-.1
-3.9	-7.5	-14.4	-12.0	-11.9	-11.7	-11.6	-10.9	-9.5	-3.3	-4.0	-1.4	-3.4	2.9	-1.0	-5.6	-6.4	-8.3	-9.8	-11.2	-14.2	-13.5	-11.6	-11.3	-12.2	-14.2	-16.2	-15.3	-18.0	-18.4	-17.3	-15.2	-13.2	-13.1	-11.2	-10.6
-7.2	-8.6	-9.5	-9.1	-8.8	-9.9	-13.6	-14.5	-12.3	-8.3	-12.3	-10.9	-6.8	-8.5	-11.1	-12.3	-13.0	-13.0	-13.8	-14.4	-16.3	-16.6	-16.2	-16.1	-17.6	-18.3	-16.8	-17.8	-20.9	-21.0	-17.7	-12.3	-5.5	-6.1	-6.2	-6.4
-10.2	-10.0	-10.3	-11.1	-12.1	-13.1	-14.1	-17.2	-18.3	-16.0	-18.5	-15.0	-12.3	-13.9	-16.2	-16.3	-16.3	-16.4	-17.2	-17.7	-19.1	-17.7	-17.7	-22.6	-25.2	-20.0	-20.2	-22.6	-29.0	-27.2	-20.6	-15.1	-10.0	-8.2	-8.5	-9.5
-17.9	-17.9	-18.7	-18.1	-17.3	-16.8	-21.8	-22.8	-23.4	-21.7	-21.6	-21.1	-20.5	-19.5	-19.4	-20.1	-19.9	-21.9	-23.6	-23.7	-24.4	-21.9	-23.5	-22.7	-23.6	-15.2	-13.3	-12.9	-25.6	-27.7	-19.5	-19.1	-18.4	-18.0	-17.4	-17.6
-21.8	-22.8	-22.1	-21.0	-20.4	-20.0	-20.8	-23.7	-25.1	-24.7	-24.5	-23.1	-23.6	-22.9	-23.0	-22.6	-23.3	-29.2	-26.7	-33.3	-34.2	-27.5	-28.3	-28.7	-27.4	-29.7	-19.3	-13.3	-22.9	-24.1	-23.2	-22.9	-23.1	-23.2	-23.1	-22.7
-24.5	-23.7	-22.7	-22.5	-22.5	-23.0	-22.9	-23.1	-22.3	-23.9	-24.7	-24.0	-24.6	-23.3	-22.9	-23.3	-26.6	-28.6	-27.4	-32.9	-30.6	-23.0	-25.6	-26.1	-22.8	-23.6	-23.9	-22.8	-23.6	-24.1	-24.8	-24.5	-24.2	-24.0	-24.1	-24.3
-23.3	-24.1	-23.7	-23.1	-23.2	-23.1	-23.0	-22.8	-22.1	-21.1	-19.5	-20.7	-21.9	-22.5	-22.6	-22.7	-22.3	-21.9	-22.5	-22.6	-21.5	-18.5	-22.4	-24.3	-24.9	-24.6	-24.8	-24.5	-23.7	-23.0	-23.4	-24.6	-24.4	-24.4	-23.7	-23.4
-24.7	-24.2	-24.0	-24.4	-24.0	-23.2	-23.5	-23.5	-22.2	-20.7	-18.7	-21.1	-20.5	-21.0	-22.4	-23.4	-23.3	-23.0	-23.5	-20.3	-19.3	-16.9	-22.6	-23.8	-25.2	-24.5	-24.8	-24.3	-23.4	-23.5	-22.1	-22.2	-21.2	-24.8	-24.1	-24.9
-23.4	-23.3	-22.9	-23.9	-23.9	-23.8	-23.7	-22.8	-22.1	-21.1	-15.1	-15.8	-19.6	-18.5	-23.2	-22.7	-22.7	-21.5	-22.8	-14.6	-14.2	-16.7	-20.7	-23.1	-23.5	-22.6	-22.7	-22.7	-22.8	-23.9	-20.7	-20.1	-21.5	-23.0	-23.4	-24.4
-20.6	-20.4	-21.2	-22.0	-21.9	-21.7	-21.8	-20.9	-20.3	-19.4	-17.3	-9.0	-15.6	-19.4	-22.5	-21.3	-20.7	-20.2	-20.1	-12.5	-9.5	-20.3	-20.2	-21.7	-21.5	-20.8	-20.9	-20.1	-20.7	-16.5	-7.9	-9.5	-12.5	-19.6	-21.8	-21.1
-16.8	-16.1	-16.2	-17.2	-18.1	-16.8	-17.2	-16.6	-16.4	-15.9	-12.1	-7.6	-13.6	-18.6	-18.6	-18.0	-16.3	-15.7	-16.4	-16.1	-13.8	-19.0	-18.5	-18.0	-17.1	-16.4	-16.2	-15.6	-16.0	-15.2	-13.6	-13.2	-8.6	-17.2	-18.1	-16.1
-13.4	-12.3	-12.0	-12.2	-11.9	-11.4	-11.4	-11.1	-10.5	-10.5	-7.2	-7.5	-10.2	-11.3	-10.4	-10.7	-8.7	-8.0	-8.9	-10.0	-11.2	-9.4	-8.9	-10.2	-11.0	-10.4	-11.0	-10.1	-9.6	-10.3	-11.3	-11.9	-12.2	-13.1	-12.5	-11.1
-8.8	-7.5	-6.6	-6.0	-6.4	-6.7	-6.6	-6.8	-6.8	-7.0	-6.5	-6.2	-4.7	-3.0	-2.2	-2.9	-2.3	-1.9	-2.2	-2.4	-3.1	-3.8	-3.7	-4.3	-3.7	-3.0	-3.5	-3.9	-4.0	-4.6	-5.2	-5.5	-5.3	-6.2	-7.9	-8.7
1.7	1.5	2.1	1.6	.6	-.7	-1.7	-2.0	-1.8	-1.4	-.7	4.8	7.0	9.6	9.9	9.4	8.6	6.0	3.9	4.0	2.5	2.2	7.2	14.3	13.0	9.4	12.8	13.8	13.9	11.3	11.0	13.6	10.1	8.2	6.0	3.0
13.8	11.8	11.1	12.5	13.9	14.5	14.5	13.4	19.2	21.3	20.2	23.1	15.8	16.6	16.7	22.1	25.0	32.9	37.4	42.1	44.5	50.0	54.1	50.4	41.5	41.1	50.2	58.6	57.2	57.7	57.1	52.1	47.3	40.7	23.5	14.3
24.8	23.3	23.1	26.9	26.5	27.4	30.9	38.0	41.7	35.3	31.3	28.9	30.3	31.6	35.1	39.2	41.8	45.4	47.8	50.2	50.8	54.0	61.0	64.3	63.9	64.4	63.5	61.6	58.9	56.3	53.6	50.0	46.2	42.2	29.5	25.0

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001

Channel: HIRS8 (Surface)

NOAA15, using all observations

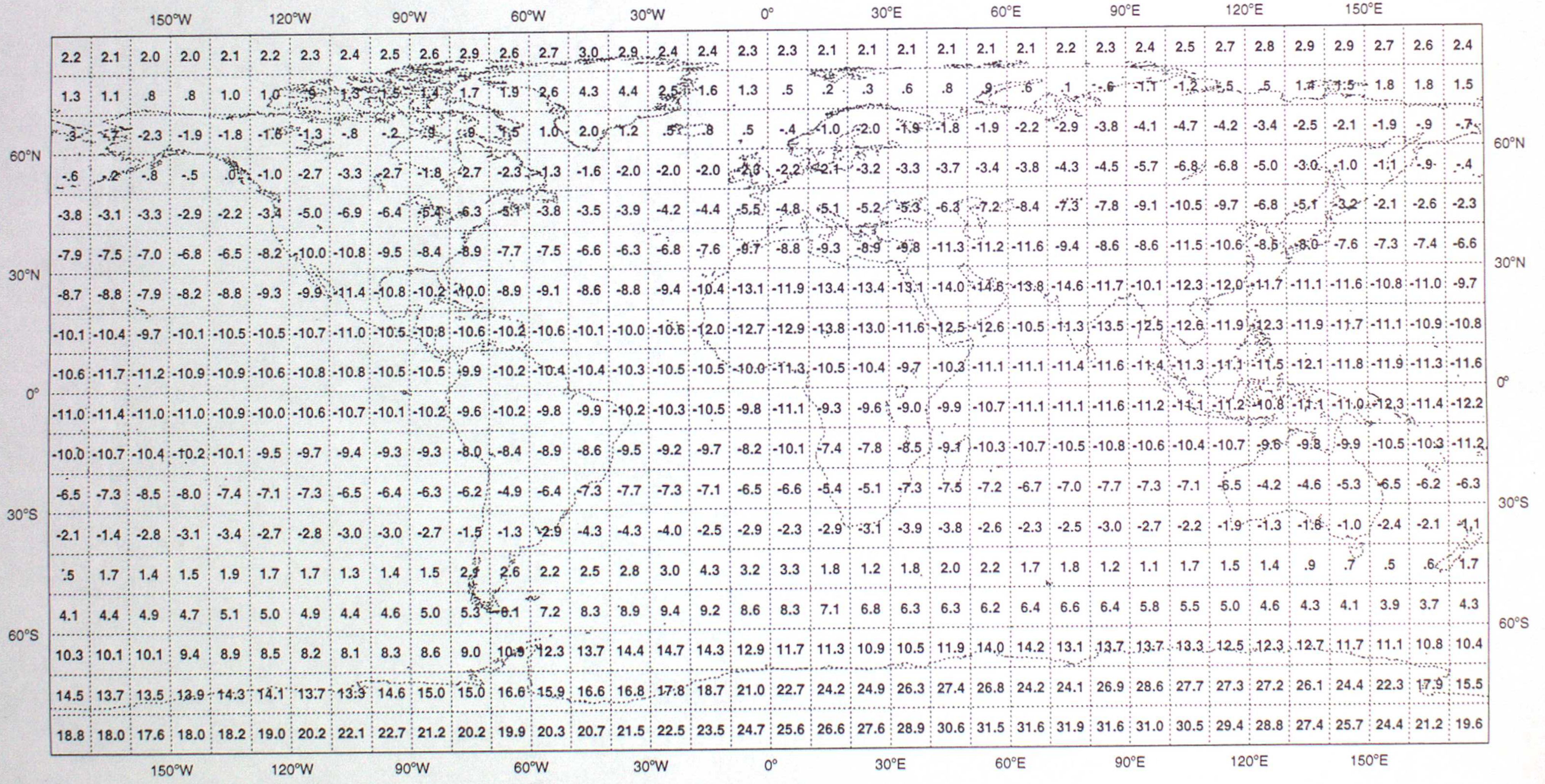


4.1	3.7	3.2	3.3	3.6	3.6	3.5	3.4	3.4	4.1	4.3	3.6	3.9	4.3	4.9	4.4	3.5	3.7	4.0	4.4	4.6	4.7	4.6	4.6	4.5	4.7	4.8	4.5	4.6	4.7	4.6	4.5	4.4	4.3	4.2	4.3
2.6	2.1	3.8	2.7	1.3	3.0	5.6	3.9	3.7	5.5	3.1	3.0	5.2	5.4	5.6	5.0	1.4	2.4	2.3	3.8	4.8	3.5	2.8	2.7	3.5	5.6	8.7	10.3	11.0	10.5	8.7	6.5	7.9	5.4	3.4	3.2
3.5	6.9	6.6	7.9	7.1	6.5	6.4	7.1	7.4	5.4	8.3	3.0	3.3	5.6	8.0	5.5	3.7	2.7	3.0	5.0	5.3	5.4	6.4	6.1	5.1	6.0	5.8	5.7	5.7	7.1	8.2	8.1	7.6	6.9	6.8	7.8
2.0	3.2	3.9	1.8	3.8	5.2	4.9	4.8	6.4	8.1	7.7	7.3	3.6	3.4	2.8	2.0	2.8	4.3	5.5	4.9	5.1	5.7	5.3	4.5	5.0	6.2	5.7	6.2	6.0	7.9	7.4	7.2	5.0	3.0	2.6	1.9
4.2	3.9	3.4	2.4	2.1	5.3	6.8	7.0	6.0	6.6	6.1	5.2	5.3	4.4	3.2	2.5	3.2	4.4	7.4	7.2	6.2	6.1	6.8	7.4	8.0	7.7	10.0	11.3	10.2	9.9	8.5	5.8	4.4	3.1	3.0	4.3
4.8	4.7	3.4	3.0	2.7	3.6	7.5	6.4	5.4	5.1	4.6	4.7	3.3	4.2	3.9	3.4	4.5	6.8	10.0	8.6	7.6	10.0	11.8	8.3	9.2	12.1	15.0	12.3	10.7	8.3	4.0	5.0	5.0	2.8	3.6	4.2
4.9	5.1	2.9	3.5	3.1	3.9	5.6	4.8	5.6	4.7	4.0	5.3	3.2	4.3	4.1	3.2	7.3	11.3	12.8	15.5	11.4	12.1	9.7	7.7	8.1	4.7	10.5	7.1	6.0	5.0	4.5	6.0	5.5	4.0	3.7	2.5
4.1	3.7	3.7	4.7	4.0	5.9	6.1	3.3	5.8	5.9	4.1	5.6	2.9	4.4	4.0	3.2	8.8	8.1	9.0	14.1	11.5	8.0	7.0	5.7	7.6	3.2	2.6	5.7	2.2	2.0	4.7	4.4	5.3	4.9	4.4	2.6
5.1	4.3	5.3	5.9	4.3	4.4	4.9	3.8	4.9	4.5	4.9	5.6	4.7	4.0	4.0	3.0	4.9	4.2	4.2	10.0	7.6	6.4	5.5	4.3	4.1	4.2	4.8	3.9	3.9	5.0	4.7	4.2	2.7	5.3	4.1	3.5
6.7	5.3	5.3	4.2	5.0	6.3	4.7	3.2	4.0	3.2	4.5	3.8	4.1	4.6	4.2	4.5	4.8	3.8	2.6	6.8	7.4	5.8	5.5	4.4	3.7	4.2	4.7	4.4	4.7	3.7	5.1	5.0	4.3	7.6	4.0	2.7
4.9	4.5	5.9	4.3	4.7	4.7	2.9	3.1	3.2	2.6	7.9	9.5	5.5	4.6	4.4	5.3	3.8	4.6	2.7	7.1	6.5	5.7	6.7	3.7	2.4	3.6	3.3	4.1	4.7	3.0	6.9	5.5	4.3	5.1	2.9	4.8
3.7	3.7	5.7	5.5	5.7	4.8	2.7	3.5	2.8	2.6	4.7	11.9	6.5	5.2	3.5	4.7	3.0	3.3	2.3	7.0	8.0	5.9	5.9	3.9	2.3	3.8	2.9	4.0	4.1	7.5	6.4	6.1	5.9	6.2	2.5	3.8
2.2	3.4	4.6	5.5	6.5	3.3	2.9	3.7	3.1	3.4	6.9	7.4	5.2	5.6	6.5	6.5	2.7	2.8	2.7	4.8	7.8	4.1	3.8	2.2	1.9	2.3	2.3	3.0	3.2	5.0	4.9	5.0	5.3	5.2	3.2	4.5
2.2	2.1	3.1	4.2	5.0	3.0	3.0	2.8	2.2	3.8	7.8	7.3	3.4	2.7	5.3	6.5	3.7	2.6	4.9	6.8	7.0	4.5	4.1	4.1	4.1	3.3	3.3	4.5	3.0	2.9	3.0	2.8	3.4	3.2	4.9	5.5
5.4	4.5	4.4	3.5	3.0	2.7	2.4	3.1	2.9	3.1	5.4	5.7	3.4	2.5	3.7	6.8	2.8	1.8	2.3	2.9	4.6	5.4	4.6	5.7	2.7	3.6	3.7	4.4	5.2	5.3	3.4	3.2	3.7	3.9	2.8	3.3
7.5	7.0	7.3	6.7	4.5	3.6	3.2	3.2	3.7	5.0	5.5	10.6	7.5	6.8	7.7	8.3	7.2	6.2	5.7	6.8	8.1	10.9	14.8	18.1	12.4	8.1	13.6	16.4	17.2	15.2	16.2	17.6	13.5	10.5	8.7	9.0
8.7	8.9	10.7	11.4	11.7	13.0	13.4	13.5	14.2	14.8	12.4	10.0	7.4	8.6	8.9	13.6	13.8	15.8	17.5	20.5	23.5	21.8	17.2	13.9	12.8	14.0	13.8	15.9	14.9	15.3	13.9	11.1	11.7	12.2	14.5	8.8
14.0	13.1	12.4	12.0	11.6	11.4	11.8	12.0	12.1	10.7	11.6	11.8	13.1	13.2	12.7	11.4	11.6	12.3	13.8	14.9	14.8	15.1	15.7	14.8	14.8	15.4	15.7	15.1	12.8	13.3	10.6	11.0	11.9	11.1	15.6	14.2

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001

Channel: HIRS15 (700 hPa)

NOAA15, using all observations

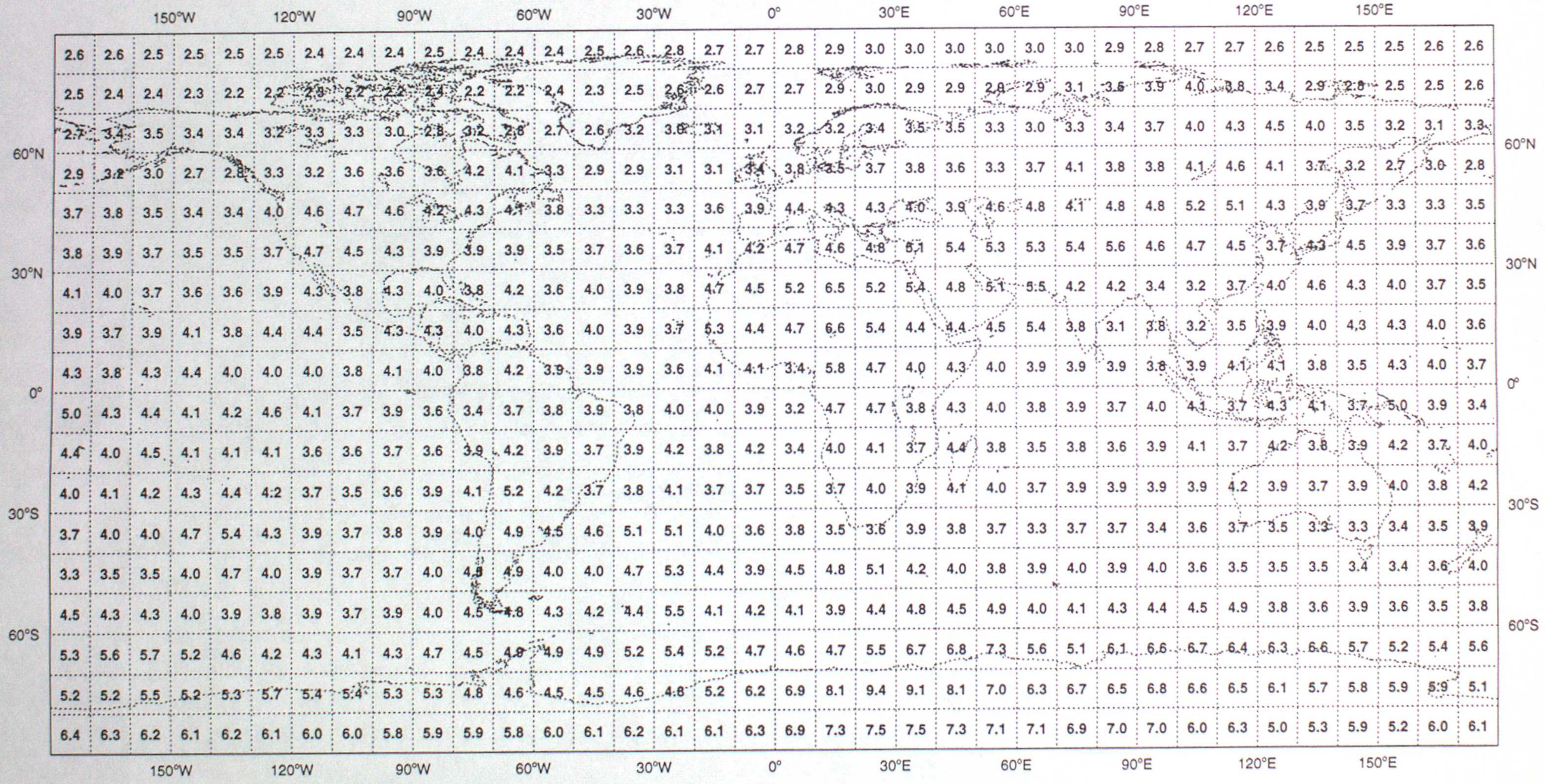


2.2	2.1	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.9	2.6	2.7	3.0	2.9	2.4	2.4	2.3	2.3	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.4	2.5	2.7	2.8	2.9	2.9	2.7	2.6	2.4
1.3	1.1	.8	.8	1.0	1.0	.9	1.3	1.5	1.4	1.7	1.9	2.6	4.3	4.4	2.5	1.6	1.3	.5	.2	.3	.6	.8	.9	.6	.1	-.6	-1.1	-1.2	-.5	.5	1.4	1.5	1.8	1.8	1.5
-.3	-.7	-2.3	-1.9	-1.8	-1.6	-1.3	-.8	-.2	-.9	.9	1.5	1.0	2.0	1.2	.5	.8	.5	-.4	-1.0	-2.0	-1.9	-1.8	-1.9	-2.2	-2.9	-3.8	-4.1	-4.7	-4.2	-3.4	-2.5	-2.1	-1.9	-.9	-.7
-.6	-.2	-.8	-.5	.0	-1.0	-2.7	-3.3	-2.7	-1.8	-2.7	-2.3	-1.3	-1.6	-2.0	-2.0	-2.0	-2.0	-2.2	-2.1	-3.2	-3.3	-3.7	-3.4	-3.8	-4.3	-4.5	-5.7	-6.8	-6.8	-5.0	-3.0	-1.0	-1.1	-.9	-.4
-3.8	-3.1	-3.3	-2.9	-2.2	-3.4	-5.0	-6.9	-6.4	-5.4	-6.3	-5.1	-3.8	-3.5	-3.9	-4.2	-4.4	-5.5	-4.8	-5.1	-5.2	-5.3	-6.3	-7.2	-8.4	-7.3	-7.8	-9.1	-10.5	-9.7	-6.8	-5.1	-3.2	-2.1	-2.6	-2.3
-7.9	-7.5	-7.0	-6.8	-6.5	-8.2	-10.0	-10.8	-9.5	-8.4	-8.9	-7.7	-7.5	-6.6	-6.3	-6.8	-7.6	-8.7	-8.8	-9.3	-8.9	-9.8	-11.3	-11.2	-11.6	-9.4	-8.6	-8.6	-11.5	-10.6	-8.5	-8.0	-7.6	-7.3	-7.4	-6.6
-8.7	-8.8	-7.9	-8.2	-8.8	-9.3	-9.9	-11.4	-10.8	-10.2	-10.0	-8.9	-9.1	-8.6	-8.8	-9.4	-10.4	-13.1	-11.9	-13.4	-13.4	-13.1	-14.0	-14.6	-13.8	-14.6	-11.7	-10.1	-12.3	-12.0	-11.7	-11.1	-11.6	-10.8	-11.0	-9.7
-10.1	-10.4	-9.7	-10.1	-10.5	-10.5	-10.7	-11.0	-10.5	-10.8	-10.6	-10.2	-10.6	-10.1	-10.0	-10.6	-12.0	-12.7	-12.9	-13.8	-13.0	-11.6	-12.5	-12.6	-10.5	-11.3	-13.5	-12.5	-12.6	-11.9	-12.3	-11.9	-11.7	-11.1	-10.9	-10.8
-10.6	-11.7	-11.2	-10.9	-10.9	-10.6	-10.8	-10.8	-10.5	-10.5	-9.9	-10.2	-10.4	-10.4	-10.3	-10.5	-10.5	-10.0	-11.3	-10.5	-10.4	-9.7	-10.3	-11.1	-11.1	-11.4	-11.6	-11.4	-11.3	-11.1	-11.5	-12.1	-11.8	-11.9	-11.3	-11.6
-11.0	-11.4	-11.0	-11.0	-10.9	-10.0	-10.6	-10.7	-10.1	-10.2	-9.6	-10.2	-9.8	-9.9	-10.2	-10.3	-10.5	-9.8	-11.1	-9.3	-9.6	-9.0	-9.9	-10.7	-11.1	-11.1	-11.6	-11.2	-11.1	-11.2	-10.8	-11.1	-11.0	-12.3	-11.4	-12.2
-10.0	-10.7	-10.4	-10.2	-10.1	-9.5	-9.7	-9.4	-9.3	-9.3	-8.0	-8.4	-8.9	-8.6	-9.5	-9.2	-9.7	-8.2	-10.1	-7.4	-7.8	-8.5	-9.1	-10.3	-10.7	-10.5	-10.8	-10.6	-10.4	-10.7	-9.6	-9.8	-9.9	-10.5	-10.3	-11.2
-6.5	-7.3	-8.5	-8.0	-7.4	-7.1	-7.3	-6.5	-6.4	-6.3	-6.2	-4.9	-6.4	-7.3	-7.7	-7.3	-7.1	-6.5	-6.6	-5.4	-5.1	-7.3	-7.5	-7.2	-6.7	-7.0	-7.7	-7.3	-7.1	-6.5	-4.2	-4.6	-5.3	-6.5	-6.2	-6.3
-2.1	-1.4	-2.8	-3.1	-3.4	-2.7	-2.8	-3.0	-3.0	-2.7	-1.5	-1.3	-2.9	-4.3	-4.3	-4.0	-2.5	-2.9	-2.3	-2.9	-3.1	-3.9	-3.8	-2.6	-2.3	-2.5	-3.0	-2.7	-2.2	-1.9	-1.3	-1.6	-1.0	-2.4	-2.1	-1.1
.5	1.7	1.4	1.5	1.9	1.7	1.7	1.3	1.4	1.5	2.9	2.6	2.2	2.5	2.8	3.0	4.3	3.2	3.3	1.8	1.2	1.8	2.0	2.2	1.7	1.8	1.2	1.1	1.7	1.5	1.4	.9	.7	.5	.6	1.7
4.1	4.4	4.9	4.7	5.1	5.0	4.9	4.4	4.6	5.0	5.3	6.1	7.2	8.3	8.9	9.4	9.2	8.6	8.3	7.1	6.8	6.3	6.3	6.2	6.4	6.6	6.4	5.8	5.5	5.0	4.6	4.3	4.1	3.9	3.7	4.3
10.3	10.1	10.1	9.4	8.9	8.5	8.2	8.1	8.3	8.6	9.0	10.9	12.3	13.7	14.4	14.7	14.3	12.9	11.7	11.3	10.9	10.5	11.9	14.0	14.2	13.1	13.7	13.7	13.3	12.5	12.3	12.7	11.7	11.1	10.8	10.4
14.5	13.7	13.5	13.9	14.3	14.1	13.7	13.3	14.6	15.0	15.0	16.6	15.9	16.6	16.8	17.8	18.7	21.0	22.7	24.2	24.9	26.3	27.4	26.8	24.2	24.1	26.9	28.6	27.7	27.3	27.2	26.1	24.4	22.3	17.9	15.5
18.8	18.0	17.6	18.0	18.2	19.0	20.2	22.1	22.7	21.2	20.2	19.9	20.3	20.7	21.5	22.5	23.5	24.7	25.6	26.6	27.6	28.9	30.6	31.5	31.6	31.9	31.6	31.0	30.5	29.4	28.8	27.4	25.7	24.4	21.2	19.6

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001

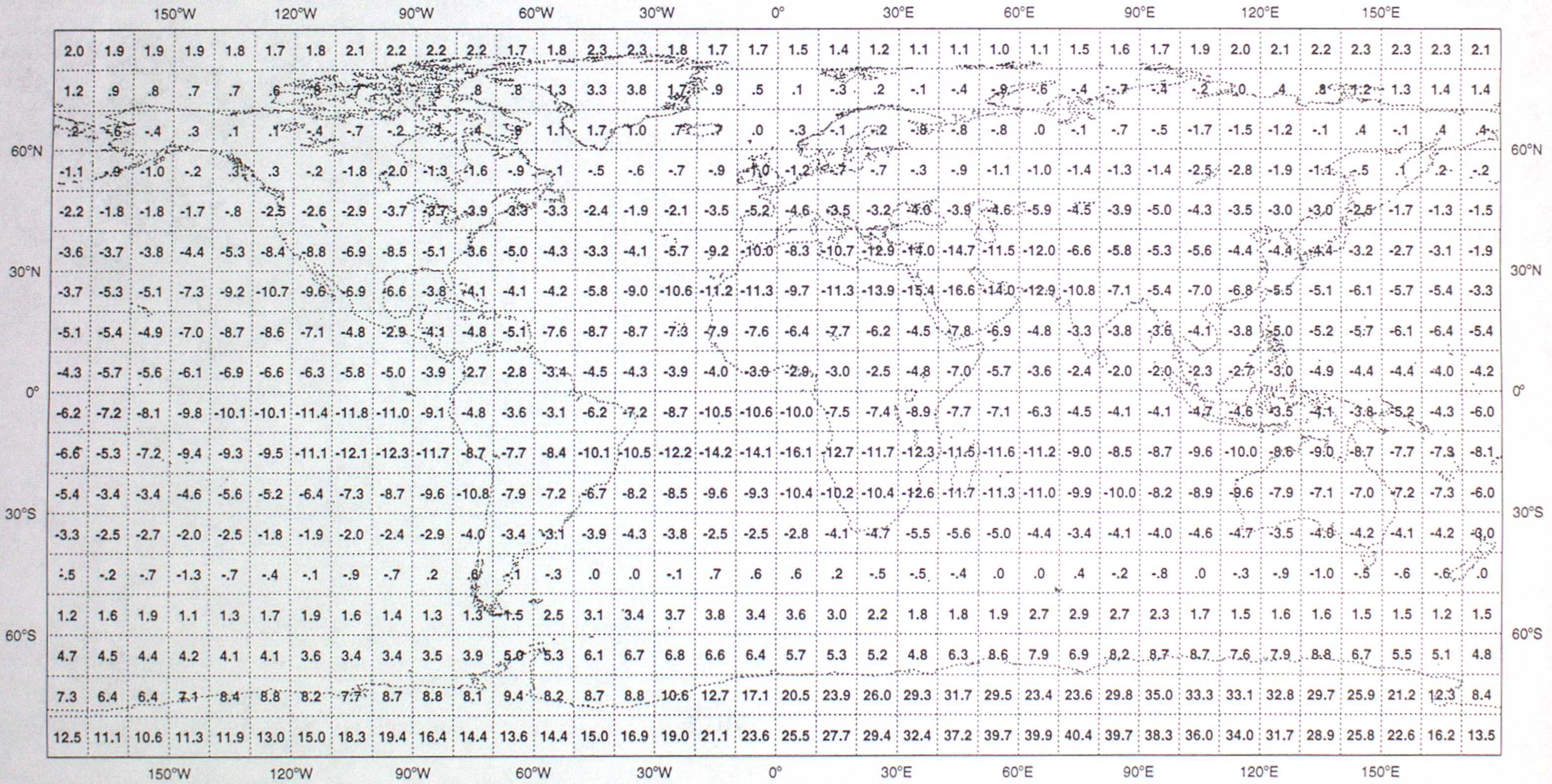
Channel: HIRS15 (700 hPa)

NOAA15, using all observations



2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.5	2.4	2.4	2.4	2.5	2.6	2.8	2.7	2.7	2.8	2.9	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.5	2.5	2.6	2.6
2.5	2.4	2.4	2.3	2.2	2.2	2.3	2.2	2.2	2.4	2.2	2.2	2.4	2.3	2.5	2.6	2.6	2.7	2.7	2.9	3.0	2.9	2.9	2.8	2.9	3.1	3.6	3.9	4.0	3.8	3.4	2.9	2.8	2.5	2.5	2.6
2.7	3.4	3.5	3.4	3.4	3.2	3.3	3.3	3.0	2.8	3.2	2.8	2.7	2.6	3.2	3.0	3.1	3.1	3.2	3.2	3.4	3.5	3.5	3.3	3.0	3.3	3.4	3.7	4.0	4.3	4.5	4.0	3.5	3.2	3.1	3.3
2.9	3.2	3.0	2.7	2.8	3.3	3.2	3.6	3.6	3.6	4.2	4.1	3.3	2.9	2.9	3.1	3.1	3.4	3.8	3.5	3.7	3.8	3.6	3.3	3.7	4.1	3.8	3.8	4.1	4.6	4.1	3.7	3.2	2.7	3.0	2.8
3.7	3.8	3.5	3.4	3.4	4.0	4.6	4.7	4.6	4.2	4.3	4.1	3.8	3.3	3.3	3.3	3.6	3.9	4.4	4.3	4.3	4.0	3.9	4.6	4.8	4.1	4.8	4.8	5.2	5.1	4.3	3.9	3.7	3.3	3.3	3.5
3.8	3.9	3.7	3.5	3.5	3.7	4.7	4.5	4.3	3.9	3.9	3.9	3.5	3.7	3.6	3.7	4.1	4.2	4.7	4.6	4.8	5.1	5.4	5.3	5.3	5.4	5.6	4.6	4.7	4.5	3.7	4.3	4.5	3.9	3.7	3.6
4.1	4.0	3.7	3.6	3.6	3.9	4.3	3.8	4.3	4.0	3.8	4.2	3.6	4.0	3.9	3.8	4.7	4.5	5.2	6.5	5.2	5.4	4.8	5.1	5.5	4.2	4.2	3.4	3.2	3.7	4.0	4.6	4.3	4.0	3.7	3.5
3.9	3.7	3.9	4.1	3.8	4.4	4.4	3.5	4.3	4.3	4.0	4.3	3.6	4.0	3.9	3.7	5.3	4.4	4.7	6.6	5.4	4.4	4.4	4.5	5.4	3.8	3.1	3.8	3.2	3.5	3.9	4.0	4.3	4.3	4.0	3.6
4.3	3.8	4.3	4.4	4.0	4.0	4.0	3.8	4.1	4.0	3.8	4.2	3.9	3.9	3.9	3.6	4.1	4.1	3.4	5.8	4.7	4.0	4.3	4.0	3.9	3.9	3.9	3.8	3.9	4.1	4.1	3.8	3.5	4.3	4.0	3.7
5.0	4.3	4.4	4.1	4.2	4.6	4.1	3.7	3.9	3.6	3.4	3.7	3.8	3.9	3.8	4.0	4.0	3.9	3.2	4.7	4.7	3.8	4.3	4.0	3.8	3.9	3.7	4.0	4.1	3.7	4.3	4.1	3.7	5.0	3.9	3.4
4.4	4.0	4.5	4.1	4.1	4.1	3.6	3.6	3.7	3.6	3.9	4.2	3.9	3.7	3.9	4.2	3.8	4.2	3.4	4.0	4.1	3.7	4.4	3.8	3.5	3.8	3.6	3.9	4.1	3.7	4.2	3.8	3.9	4.2	3.7	4.0
4.0	4.1	4.2	4.3	4.4	4.2	3.7	3.5	3.6	3.9	4.1	5.2	4.2	3.7	3.8	4.1	3.7	3.7	3.5	3.7	4.0	3.9	4.1	4.0	3.7	3.9	3.9	3.9	3.9	4.2	3.9	3.7	3.9	4.0	3.8	4.2
3.7	4.0	4.0	4.7	5.4	4.3	3.9	3.7	3.8	3.9	4.0	4.9	4.5	4.6	5.1	5.1	4.0	3.6	3.8	3.5	3.6	3.9	3.8	3.7	3.3	3.7	3.7	3.4	3.6	3.7	3.5	3.3	3.3	3.4	3.5	3.9
3.3	3.5	3.5	4.0	4.7	4.0	3.9	3.7	3.7	4.0	4.5	4.9	4.0	4.0	4.7	5.3	4.4	3.9	4.5	4.8	5.1	4.2	4.0	3.8	3.9	4.0	3.9	4.0	3.6	3.5	3.5	3.5	3.4	3.4	3.6	4.0
4.5	4.3	4.3	4.0	3.9	3.8	3.9	3.7	3.9	4.0	4.5	4.8	4.3	4.2	4.4	5.5	4.1	4.2	4.1	3.9	4.4	4.8	4.5	4.9	4.0	4.1	4.3	4.4	4.5	4.9	3.8	3.6	3.9	3.6	3.5	3.8
5.3	5.6	5.7	5.2	4.6	4.2	4.3	4.1	4.3	4.7	4.5	4.8	4.9	4.9	5.2	5.4	5.2	4.7	4.6	4.7	5.5	6.7	6.8	7.3	5.6	5.1	6.1	6.6	6.7	6.4	6.3	6.6	5.7	5.2	5.4	5.6
5.2	5.2	5.5	5.2	5.3	5.7	5.4	5.4	5.3	5.3	4.8	4.6	4.5	4.5	4.6	4.8	5.2	6.2	6.9	8.1	9.4	9.1	8.1	7.0	6.3	6.7	6.5	6.8	6.6	6.5	6.1	5.7	5.8	5.9	5.9	5.1
6.4	6.3	6.2	6.1	6.2	6.1	6.0	6.0	5.8	5.9	5.9	5.8	6.0	6.1	6.2	6.1	6.1	6.3	6.9	7.3	7.5	7.5	7.3	7.1	7.1	6.9	7.0	7.0	6.0	6.3	5.0	5.3	5.9	5.2	6.0	6.1

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations

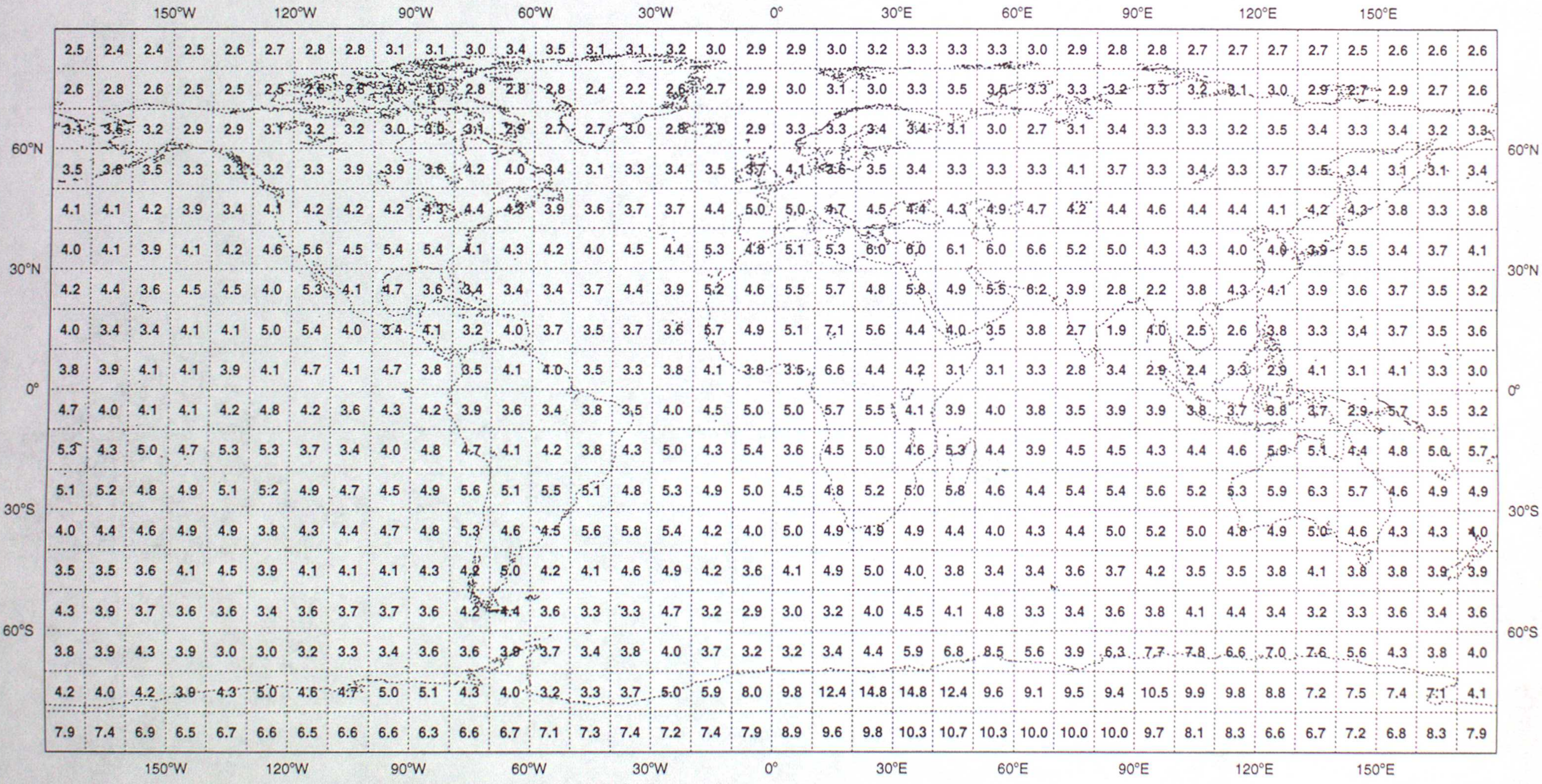


2.0	1.9	1.9	1.9	1.8	1.7	1.8	2.1	2.2	2.2	2.2	1.7	1.8	2.3	2.3	1.8	1.7	1.7	1.5	1.4	1.2	1.1	1.1	1.0	1.1	1.5	1.6	1.7	1.9	2.0	2.1	2.2	2.3	2.3	2.3	2.1
1.2	.9	.8	.7	.7	.6	.8	.7	.3	.4	.8	.8	1.3	3.3	3.8	1.7	.9	.5	.1	-.3	.2	-.1	-.4	-.9	-.6	-.4	-.7	-.4	-.2	.0	.4	.8	1.2	1.3	1.4	1.4
.2	-.6	-.4	.3	.1	.1	-.4	-.7	-.2	.3	.4	.9	1.1	1.7	1.0	.7	.7	.0	-.3	-.1	-.2	-.8	-.8	-.8	.0	-.1	-.7	-.5	-1.7	-1.5	-1.2	-.1	.4	-.1	.4	.4
-1.1	-.9	-1.0	-.2	.3	.3	-.2	-1.8	-2.0	-1.3	-1.6	-.9	-.1	-.5	-.6	-.7	-.9	-1.0	-1.2	-.7	-.7	-.3	-.9	-1.1	-1.0	-1.4	-1.3	-1.4	-2.5	-2.8	-1.9	-1.1	-.5	.1	.2	-.2
-2.2	-1.8	-1.8	-1.7	-.8	-2.5	-2.6	-2.9	-3.7	-3.7	-3.9	-3.3	-3.3	-2.4	-1.9	-2.1	-3.5	-5.2	-4.6	-3.5	-3.2	-4.0	-3.9	-4.6	-5.9	-4.5	-3.9	-5.0	-4.3	-3.5	-3.0	-3.0	-2.5	-1.7	-1.3	-1.5
-3.6	-3.7	-3.8	-4.4	-5.3	-8.4	-8.8	-6.9	-8.5	-5.1	-3.6	-5.0	-4.3	-3.3	-4.1	-5.7	-9.2	-10.0	-8.3	-10.7	-12.9	-14.0	-14.7	-11.5	-12.0	-6.6	-5.8	-5.3	-5.6	-4.4	-4.4	-4.4	-3.2	-2.7	-3.1	-1.9
-3.7	-5.3	-5.1	-7.3	-9.2	-10.7	-9.6	-6.9	-6.6	-3.8	-4.1	-4.1	-4.2	-5.8	-9.0	-10.6	-11.2	-11.3	-9.7	-11.3	-13.9	-15.4	-16.6	-14.0	-12.9	-10.8	-7.1	-5.4	-7.0	-6.8	-5.5	-5.1	-6.1	-5.7	-5.4	-3.3
-5.1	-5.4	-4.9	-7.0	-8.7	-8.6	-7.1	-4.8	-2.9	-4.1	-4.8	-5.1	-7.6	-8.7	-8.7	-7.3	-7.9	-7.6	-6.4	-7.7	-6.2	-4.5	-7.8	-6.9	-4.8	-3.3	-3.8	-3.6	-4.1	-3.8	-5.0	-5.2	-5.7	-6.1	-6.4	-5.4
-4.3	-5.7	-5.6	-6.1	-6.9	-6.6	-6.3	-5.8	-5.0	-3.9	-2.7	-2.8	-3.4	-4.5	-4.3	-3.9	-4.0	-3.0	-2.9	-3.0	-2.5	-4.8	-7.0	-5.7	-3.6	-2.4	-2.0	-2.0	-2.3	-2.7	-3.0	-4.9	-4.4	-4.4	-4.0	-4.2
-6.2	-7.2	-8.1	-9.8	-10.1	-10.1	-11.4	-11.8	-11.0	-9.1	-4.8	-3.6	-3.1	-6.2	-7.2	-8.7	-10.5	-10.6	-10.0	-7.5	-7.4	-8.9	-7.7	-7.1	-6.3	-4.5	-4.1	-4.1	-4.7	-4.6	-3.5	-4.1	-3.8	-5.2	-4.3	-6.0
-6.6	-5.3	-7.2	-9.4	-9.3	-9.5	-11.1	-12.1	-12.3	-11.7	-8.7	-7.7	-8.4	-10.1	-10.5	-12.2	-14.2	-14.1	-16.1	-12.7	-11.7	-12.3	-11.5	-11.6	-11.2	-9.0	-8.5	-8.7	-9.6	-10.0	-8.6	-9.0	-8.7	-7.7	-7.3	-8.1
-5.4	-3.4	-3.4	-4.6	-5.6	-5.2	-6.4	-7.3	-8.7	-9.6	-10.8	-7.9	-7.2	-6.7	-8.2	-8.5	-9.6	-9.3	-10.4	-10.2	-10.4	-12.6	-11.7	-11.3	-11.0	-9.9	-10.0	-8.2	-8.9	-9.6	-7.9	-7.1	-7.0	-7.2	-7.3	-6.0
-3.3	-2.5	-2.7	-2.0	-2.5	-1.8	-1.9	-2.0	-2.4	-2.9	-4.0	-3.4	-3.1	-3.9	-4.3	-3.8	-2.5	-2.5	-2.8	-4.1	-4.7	-5.5	-5.6	-5.0	-4.4	-3.4	-4.1	-4.0	-4.6	-4.7	-3.5	-4.0	-4.2	-4.1	-4.2	-3.0
-.5	-.2	-.7	-1.3	-.7	-.4	-.1	-.9	-.7	.2	.6	-.1	-.3	.0	.0	-.1	.7	.6	.6	.2	-.5	-.5	-.4	.0	.0	.4	-.2	-.8	.0	-.3	-.9	-1.0	-.5	-.6	-.6	.0
1.2	1.6	1.9	1.1	1.3	1.7	1.9	1.6	1.4	1.3	1.3	1.5	2.5	3.1	3.4	3.7	3.8	3.4	3.6	3.0	2.2	1.8	1.8	1.9	2.7	2.9	2.7	2.3	1.7	1.5	1.6	1.6	1.5	1.5	1.2	1.5
4.7	4.5	4.4	4.2	4.1	4.1	3.6	3.4	3.4	3.5	3.9	5.0	5.3	6.1	6.7	6.8	6.6	6.4	5.7	5.3	5.2	4.8	6.3	8.6	7.9	6.9	8.2	8.7	8.7	7.6	7.9	8.8	6.7	5.5	5.1	4.8
7.3	6.4	6.4	7.1	8.4	8.8	8.2	7.7	8.7	8.8	8.1	9.4	8.2	8.7	8.8	10.6	12.7	17.1	20.5	23.9	26.0	29.3	31.7	29.5	23.4	23.6	29.8	35.0	33.3	33.1	32.8	29.7	25.9	21.2	12.3	8.4
12.5	11.1	10.6	11.3	11.9	13.0	15.0	18.3	19.4	16.4	14.4	13.6	14.4	15.0	16.9	19.0	21.1	23.6	25.5	27.7	29.4	32.4	37.2	39.7	39.9	40.4	39.7	38.3	36.0	34.0	31.7	28.9	25.8	22.6	16.2	13.5

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001

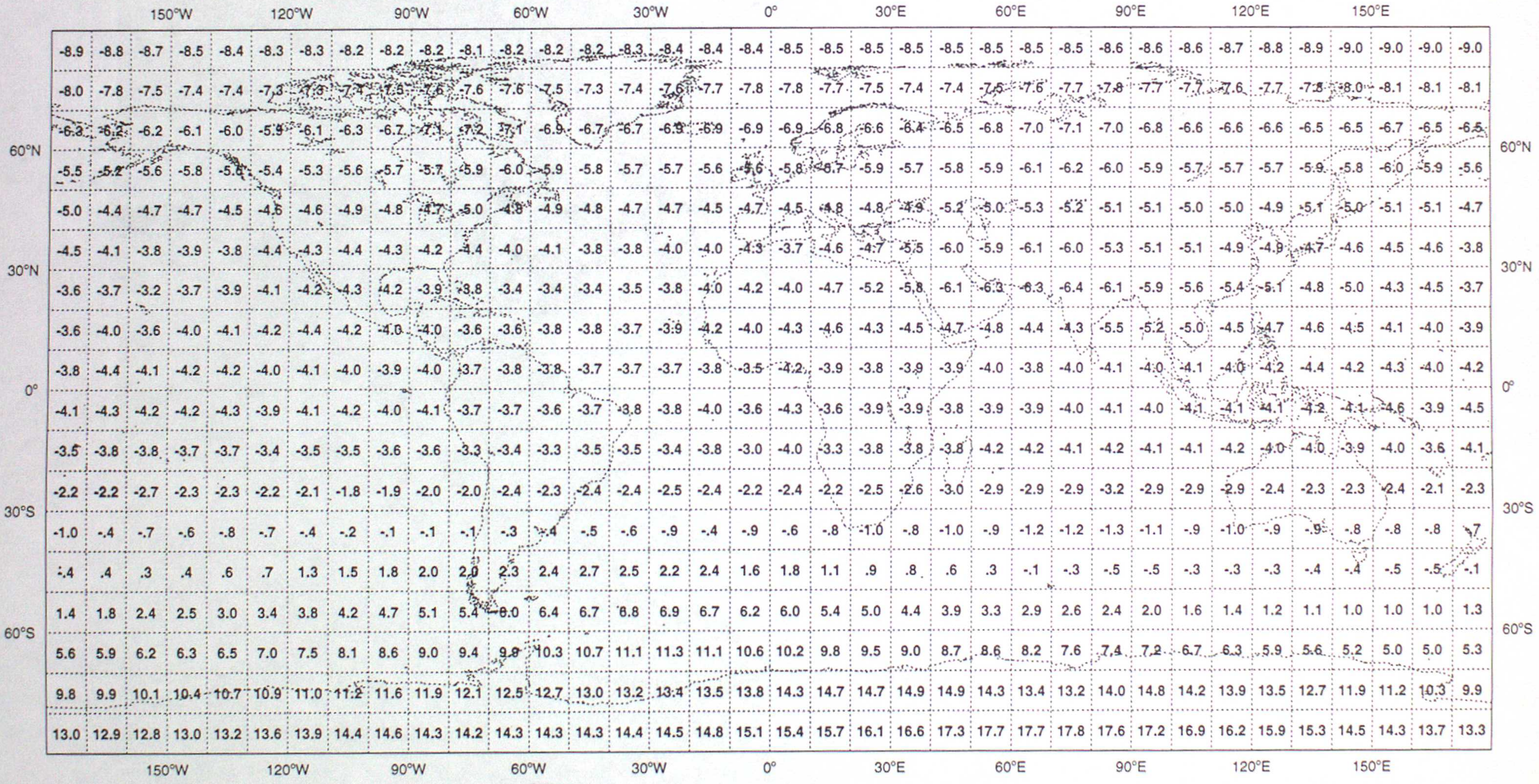
Channel: HIRS11 (500 - 700 hPa)

NOAA15, using all observations



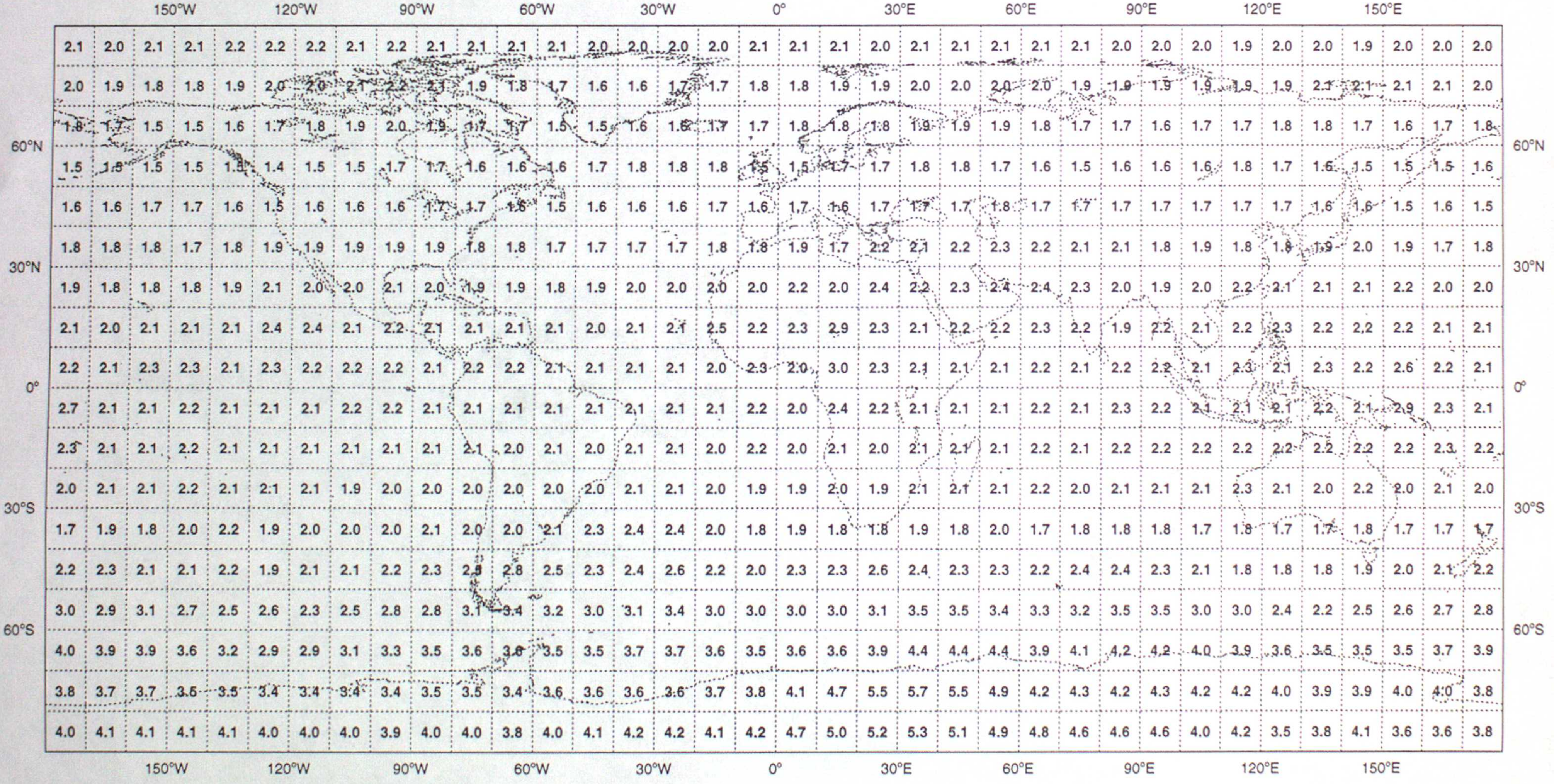
2.5	2.4	2.4	2.5	2.6	2.7	2.8	2.8	3.1	3.1	3.0	3.4	3.5	3.1	3.1	3.2	3.0	2.9	2.9	3.0	3.2	3.3	3.3	3.3	3.0	2.9	2.8	2.8	2.7	2.7	2.7	2.7	2.5	2.6	2.6	2.6
2.6	2.8	2.6	2.5	2.5	2.5	2.6	2.8	3.0	3.0	2.8	2.8	2.8	2.4	2.2	2.6	2.7	2.9	3.0	3.1	3.0	3.3	3.5	3.5	3.3	3.3	3.2	3.3	3.2	3.1	3.0	2.9	2.7	2.9	2.7	2.6
3.1	3.6	3.2	2.9	2.9	3.1	3.2	3.2	3.0	3.0	3.1	2.9	2.7	2.7	3.0	2.8	2.9	2.9	3.3	3.3	3.4	3.4	3.1	3.0	2.7	3.1	3.4	3.3	3.3	3.2	3.5	3.4	3.3	3.4	3.2	3.3
3.5	3.6	3.5	3.3	3.3	3.2	3.3	3.9	3.9	3.6	4.2	4.0	3.4	3.1	3.3	3.4	3.5	3.7	4.1	3.6	3.5	3.4	3.3	3.3	3.3	4.1	3.7	3.3	3.4	3.3	3.7	3.5	3.4	3.1	3.1	3.4
4.1	4.1	4.2	3.9	3.4	4.1	4.2	4.2	4.2	4.3	4.4	4.3	3.9	3.6	3.7	3.7	4.4	5.0	5.0	4.7	4.5	4.4	4.3	4.9	4.7	4.2	4.4	4.6	4.4	4.4	4.1	4.2	4.3	3.8	3.3	3.8
4.0	4.1	3.9	4.1	4.2	4.6	5.6	4.5	5.4	5.4	4.1	4.3	4.2	4.0	4.5	4.4	5.3	4.8	5.1	5.3	6.0	6.0	6.1	6.0	6.6	5.2	5.0	4.3	4.3	4.0	4.0	3.9	3.5	3.4	3.7	4.1
4.2	4.4	3.6	4.5	4.5	4.0	5.3	4.1	4.7	3.6	3.4	3.4	3.4	3.7	4.4	3.9	5.2	4.6	5.5	5.7	4.8	5.8	4.9	5.5	6.2	3.9	2.8	2.2	3.8	4.3	4.1	3.9	3.6	3.7	3.5	3.2
4.0	3.4	3.4	4.1	4.1	5.0	5.4	4.0	3.4	4.1	3.2	4.0	3.7	3.5	3.7	3.6	5.7	4.9	5.1	7.1	5.6	4.4	4.0	3.5	3.8	2.7	1.9	4.0	2.5	2.6	3.8	3.3	3.4	3.7	3.5	3.6
3.8	3.9	4.1	4.1	3.9	4.1	4.7	4.1	4.7	3.8	3.5	4.1	4.0	3.5	3.3	3.8	4.1	3.8	3.5	6.6	4.4	4.2	3.1	3.1	3.3	2.8	3.4	2.9	2.4	3.3	2.9	4.1	3.1	4.1	3.3	3.0
4.7	4.0	4.1	4.1	4.2	4.8	4.2	3.6	4.3	4.2	3.9	3.6	3.4	3.8	3.5	4.0	4.5	5.0	5.0	5.7	5.5	4.1	3.9	4.0	3.8	3.5	3.9	3.9	3.8	3.7	3.8	3.7	2.9	5.7	3.5	3.2
5.3	4.3	5.0	4.7	5.3	5.3	3.7	3.4	4.0	4.8	4.7	4.1	4.2	3.8	4.3	5.0	4.3	5.4	3.6	4.5	5.0	4.6	5.3	4.4	3.9	4.5	4.5	4.3	4.4	4.6	5.9	5.1	4.4	4.8	5.0	5.7
5.1	5.2	4.8	4.9	5.1	5.2	4.9	4.7	4.5	4.9	5.6	5.1	5.5	5.1	4.8	5.3	4.9	5.0	4.5	4.8	5.2	5.0	5.8	4.6	4.4	5.4	5.4	5.6	5.2	5.3	5.9	6.3	5.7	4.6	4.9	4.9
4.0	4.4	4.6	4.9	4.9	3.8	4.3	4.4	4.7	4.8	5.3	4.6	4.5	5.6	5.8	5.4	4.2	4.0	5.0	4.9	4.9	4.9	4.4	4.0	4.3	4.4	5.0	5.2	5.0	4.8	4.9	5.0	4.6	4.3	4.3	4.0
3.5	3.5	3.6	4.1	4.5	3.9	4.1	4.1	4.1	4.3	4.2	5.0	4.2	4.1	4.6	4.9	4.2	3.6	4.1	4.9	5.0	4.0	3.8	3.4	3.4	3.6	3.7	4.2	3.5	3.5	3.8	4.1	3.8	3.8	3.9	3.9
4.3	3.9	3.7	3.6	3.6	3.4	3.6	3.7	3.7	3.6	4.2	4.4	3.6	3.3	3.3	4.7	3.2	2.9	3.0	3.2	4.0	4.5	4.1	4.8	3.3	3.4	3.6	3.8	4.1	4.4	3.4	3.2	3.3	3.6	3.4	3.6
3.8	3.9	4.3	3.9	3.0	3.0	3.2	3.3	3.4	3.6	3.6	3.8	3.7	3.4	3.8	4.0	3.7	3.2	3.2	3.4	4.4	5.9	6.8	8.5	5.6	3.9	6.3	7.7	7.8	6.6	7.0	7.6	5.6	4.3	3.8	4.0
4.2	4.0	4.2	3.9	4.3	5.0	4.6	4.7	5.0	5.1	4.3	4.0	3.2	3.3	3.7	5.0	5.9	8.0	9.8	12.4	14.8	14.8	12.4	9.6	9.1	9.5	9.4	10.5	9.9	9.8	8.8	7.2	7.5	7.4	7.1	4.1
7.9	7.4	6.9	6.5	6.7	6.6	6.5	6.6	6.6	6.3	6.6	6.7	7.1	7.3	7.4	7.2	7.4	7.9	8.9	9.6	9.8	10.3	10.7	10.3	10.0	10.0	10.0	9.7	8.1	8.3	6.6	6.7	7.2	6.8	8.3	7.9

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



-8.9	-8.8	-8.7	-8.5	-8.4	-8.3	-8.3	-8.2	-8.2	-8.2	-8.1	-8.2	-8.2	-8.2	-8.3	-8.4	-8.4	-8.4	-8.5	-8.5	-8.5	-8.5	-8.5	-8.5	-8.5	-8.5	-8.6	-8.6	-8.6	-8.7	-8.8	-8.9	-9.0	-9.0	-9.0	-9.0
-8.0	-7.8	-7.5	-7.4	-7.4	-7.3	-7.3	-7.4	-7.5	-7.6	-7.6	-7.6	-7.5	-7.3	-7.4	-7.6	-7.7	-7.8	-7.8	-7.7	-7.5	-7.4	-7.4	-7.5	-7.6	-7.7	-7.8	-7.7	-7.7	-7.6	-7.7	-7.8	-8.0	-8.1	-8.1	-8.1
-6.3	-6.2	-6.2	-6.1	-6.0	-5.9	-6.1	-6.3	-6.7	-7.1	-7.2	-7.1	-6.9	-6.7	-6.7	-6.9	-6.9	-6.9	-6.9	-6.8	-6.6	-6.4	-6.5	-6.8	-7.0	-7.1	-7.0	-6.8	-6.6	-6.6	-6.6	-6.5	-6.5	-6.7	-6.5	-6.5
-5.5	-5.2	-5.6	-5.8	-5.6	-5.4	-5.3	-5.6	-5.7	-5.7	-5.9	-6.0	-5.9	-5.8	-5.7	-5.7	-5.6	-5.6	-5.8	-6.7	-5.9	-5.7	-5.8	-5.9	-6.1	-6.2	-6.0	-5.9	-5.7	-5.7	-5.7	-5.9	-5.8	-6.0	-5.9	-5.6
-5.0	-4.4	-4.7	-4.7	-4.5	-4.6	-4.6	-4.9	-4.8	-4.7	-5.0	-4.8	-4.9	-4.8	-4.7	-4.7	-4.5	-4.7	-4.5	-4.8	-4.8	-4.9	-5.2	-5.0	-5.3	-5.2	-5.1	-5.1	-5.0	-5.0	-4.9	-5.1	-5.0	-5.1	-5.1	-4.7
-4.5	-4.1	-3.8	-3.9	-3.8	-4.4	-4.3	-4.4	-4.3	-4.2	-4.4	-4.0	-4.1	-3.8	-3.8	-4.0	-4.0	-4.3	-3.7	-4.6	-4.7	-5.5	-6.0	-5.9	-6.1	-6.0	-5.3	-5.1	-5.1	-4.9	-4.9	-4.7	-4.6	-4.5	-4.6	-3.8
-3.6	-3.7	-3.2	-3.7	-3.9	-4.1	-4.2	-4.3	-4.2	-3.9	-3.8	-3.4	-3.4	-3.4	-3.5	-3.8	-4.0	-4.2	-4.0	-4.7	-5.2	-5.8	-6.1	-6.3	-6.3	-6.4	-6.1	-5.9	-5.6	-5.4	-5.1	-4.8	-5.0	-4.3	-4.5	-3.7
-3.6	-4.0	-3.6	-4.0	-4.1	-4.2	-4.4	-4.2	-4.0	-4.0	-3.6	-3.6	-3.8	-3.8	-3.7	-3.9	-4.2	-4.0	-4.3	-4.6	-4.3	-4.5	-4.7	-4.8	-4.4	-4.3	-5.5	-5.2	-5.0	-4.5	-4.7	-4.6	-4.5	-4.1	-4.0	-3.9
-3.8	-4.4	-4.1	-4.2	-4.2	-4.0	-4.1	-4.0	-3.9	-4.0	-3.7	-3.8	-3.8	-3.7	-3.7	-3.7	-3.8	-3.5	-4.2	-3.9	-3.8	-3.9	-3.9	-4.0	-3.8	-4.0	-4.1	-4.0	-4.1	-4.0	-4.2	-4.4	-4.2	-4.3	-4.0	-4.2
-4.1	-4.3	-4.2	-4.2	-4.3	-3.9	-4.1	-4.2	-4.0	-4.1	-3.7	-3.7	-3.6	-3.7	-3.8	-3.8	-4.0	-3.6	-4.3	-3.6	-3.9	-3.9	-3.8	-3.9	-3.9	-4.0	-4.1	-4.0	-4.1	-4.1	-4.1	-4.2	-4.1	-4.6	-3.9	-4.5
-3.5	-3.8	-3.8	-3.7	-3.7	-3.4	-3.5	-3.5	-3.6	-3.6	-3.3	-3.4	-3.3	-3.5	-3.5	-3.4	-3.8	-3.0	-4.0	-3.3	-3.8	-3.8	-3.8	-4.2	-4.2	-4.1	-4.2	-4.1	-4.1	-4.2	-4.0	-4.0	-3.9	-4.0	-3.6	-4.1
-2.2	-2.2	-2.7	-2.3	-2.3	-2.2	-2.1	-1.8	-1.9	-2.0	-2.0	-2.4	-2.3	-2.4	-2.4	-2.5	-2.4	-2.2	-2.4	-2.2	-2.5	-2.6	-3.0	-2.9	-2.9	-2.9	-3.2	-2.9	-2.9	-2.9	-2.4	-2.3	-2.3	-2.4	-2.1	-2.3
-1.0	-.4	-.7	-.6	-.8	-.7	-.4	-.2	-.1	-.1	-.1	-.3	-.4	-.5	-.6	-.9	-.4	-.9	-.6	-.8	-1.0	-.8	-1.0	-.9	-1.2	-1.2	-1.3	-1.1	-.9	-1.0	-.9	-.9	-.8	-.8	-.8	-.7
-.4	.4	.3	.4	.6	.7	1.3	1.5	1.8	2.0	2.0	2.3	2.4	2.7	2.5	2.2	2.4	1.6	1.8	1.1	.9	.8	.6	.3	-.1	-.3	-.5	-.5	-.3	-.3	-.3	-.4	-.4	-.5	-.5	-.1
1.4	1.8	2.4	2.5	3.0	3.4	3.8	4.2	4.7	5.1	5.4	6.0	6.4	6.7	6.8	6.9	6.7	6.2	6.0	5.4	5.0	4.4	3.9	3.3	2.9	2.6	2.4	2.0	1.6	1.4	1.2	1.1	1.0	1.0	1.0	1.3
5.6	5.9	6.2	6.3	6.5	7.0	7.5	8.1	8.6	9.0	9.4	9.8	10.3	10.7	11.1	11.3	11.1	10.6	10.2	9.8	9.5	9.0	8.7	8.6	8.2	7.6	7.4	7.2	6.7	6.3	5.9	5.6	5.2	5.0	5.0	5.3
9.8	9.9	10.1	10.4	10.7	10.9	11.0	11.2	11.6	11.9	12.1	12.5	12.7	13.0	13.2	13.4	13.5	13.8	14.3	14.7	14.7	14.9	14.9	14.3	13.4	13.2	14.0	14.8	14.2	13.9	13.5	12.7	11.9	11.2	10.3	9.9
13.0	12.9	12.8	13.0	13.2	13.6	13.9	14.4	14.6	14.3	14.2	14.3	14.3	14.3	14.4	14.5	14.8	15.1	15.4	15.7	16.1	16.6	17.3	17.7	17.7	17.8	17.6	17.2	16.9	16.2	15.9	15.3	14.5	14.3	13.7	13.3

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



2.1	2.0	2.1	2.1	2.2	2.2	2.2	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	1.9	2.0	2.0	1.9	2.0	2.0	2.0
2.0	1.9	1.8	1.8	1.9	2.0	2.0	2.1	2.2	2.1	1.9	1.8	1.7	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.1	2.1	2.1	2.1	2.0
1.8	1.7	1.5	1.5	1.6	1.7	1.8	1.9	2.0	1.9	1.7	1.7	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.7	1.7	1.6	1.7	1.7	1.8	1.8	1.7	1.6	1.7	1.8
1.5	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.7	1.7	1.6	1.6	1.6	1.7	1.8	1.8	1.8	1.5	1.5	1.7	1.7	1.8	1.8	1.7	1.6	1.5	1.6	1.6	1.6	1.8	1.7	1.6	1.5	1.5	1.5	1.6
1.6	1.6	1.7	1.7	1.6	1.5	1.6	1.6	1.6	1.7	1.7	1.6	1.5	1.6	1.6	1.6	1.7	1.6	1.7	1.6	1.7	1.7	1.7	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.6	1.5
1.8	1.8	1.8	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.8	1.8	1.9	1.7	2.2	2.1	2.2	2.3	2.2	2.1	2.1	1.8	1.9	1.8	1.8	1.9	2.0	1.9	1.7	1.8
1.9	1.8	1.8	1.8	1.9	2.1	2.0	2.0	2.1	2.0	1.9	1.9	1.8	1.9	2.0	2.0	2.0	2.0	2.2	2.0	2.4	2.2	2.3	2.4	2.4	2.3	2.0	1.9	2.0	2.2	2.1	2.1	2.1	2.2	2.0	2.0
2.1	2.0	2.1	2.1	2.1	2.4	2.4	2.1	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.5	2.2	2.3	2.9	2.3	2.1	2.2	2.2	2.3	2.2	1.9	2.2	2.1	2.2	2.3	2.2	2.2	2.2	2.1	2.1
2.2	2.1	2.3	2.3	2.1	2.3	2.2	2.2	2.2	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.3	2.0	3.0	2.3	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.1	2.3	2.1	2.3	2.2	2.6	2.2	2.1
2.7	2.1	2.1	2.2	2.1	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.0	2.4	2.2	2.1	2.1	2.1	2.2	2.1	2.3	2.2	2.1	2.1	2.1	2.2	2.1	2.9	2.3	2.1
2.3	2.1	2.1	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.0	2.2	2.0	2.1	2.0	2.1	2.1	2.1	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2
2.0	2.1	2.1	2.2	2.1	2.1	2.1	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.0	1.9	1.9	2.0	1.9	2.1	2.1	2.1	2.2	2.0	2.1	2.1	2.1	2.3	2.1	2.0	2.2	2.0	2.1	2.0
1.7	1.9	1.8	2.0	2.2	1.9	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.3	2.4	2.4	2.0	1.8	1.9	1.8	1.8	1.9	1.8	2.0	1.7	1.8	1.8	1.8	1.7	1.8	1.7	1.7	1.8	1.7	1.7	1.7
2.2	2.3	2.1	2.1	2.2	1.9	2.1	2.1	2.2	2.3	2.5	2.8	2.5	2.3	2.4	2.6	2.2	2.0	2.3	2.3	2.6	2.4	2.3	2.3	2.2	2.4	2.4	2.3	2.1	1.8	1.8	1.8	1.9	2.0	2.1	2.2
3.0	2.9	3.1	2.7	2.5	2.6	2.3	2.5	2.8	2.8	3.1	3.4	3.2	3.0	3.1	3.4	3.0	3.0	3.0	3.0	3.1	3.5	3.5	3.4	3.3	3.2	3.5	3.5	3.0	3.0	2.4	2.2	2.5	2.6	2.7	2.8
4.0	3.9	3.9	3.6	3.2	2.9	2.9	3.1	3.3	3.5	3.6	3.6	3.5	3.5	3.7	3.7	3.6	3.5	3.6	3.6	3.9	4.4	4.4	4.4	3.9	4.1	4.2	4.2	4.0	3.9	3.6	3.5	3.5	3.5	3.7	3.9
3.8	3.7	3.7	3.5	3.5	3.4	3.4	3.4	3.4	3.5	3.5	3.4	3.6	3.6	3.6	3.6	3.7	3.8	4.1	4.7	5.5	5.7	5.5	4.9	4.2	4.3	4.2	4.3	4.2	4.2	4.0	3.9	3.9	4.0	4.0	3.8
4.0	4.1	4.1	4.1	4.1	4.0	4.0	4.0	3.9	4.0	4.0	3.8	4.0	4.1	4.2	4.2	4.1	4.2	4.7	5.0	5.2	5.3	5.1	4.9	4.8	4.6	4.6	4.6	4.0	4.2	3.5	3.8	4.1	3.6	3.6	3.8

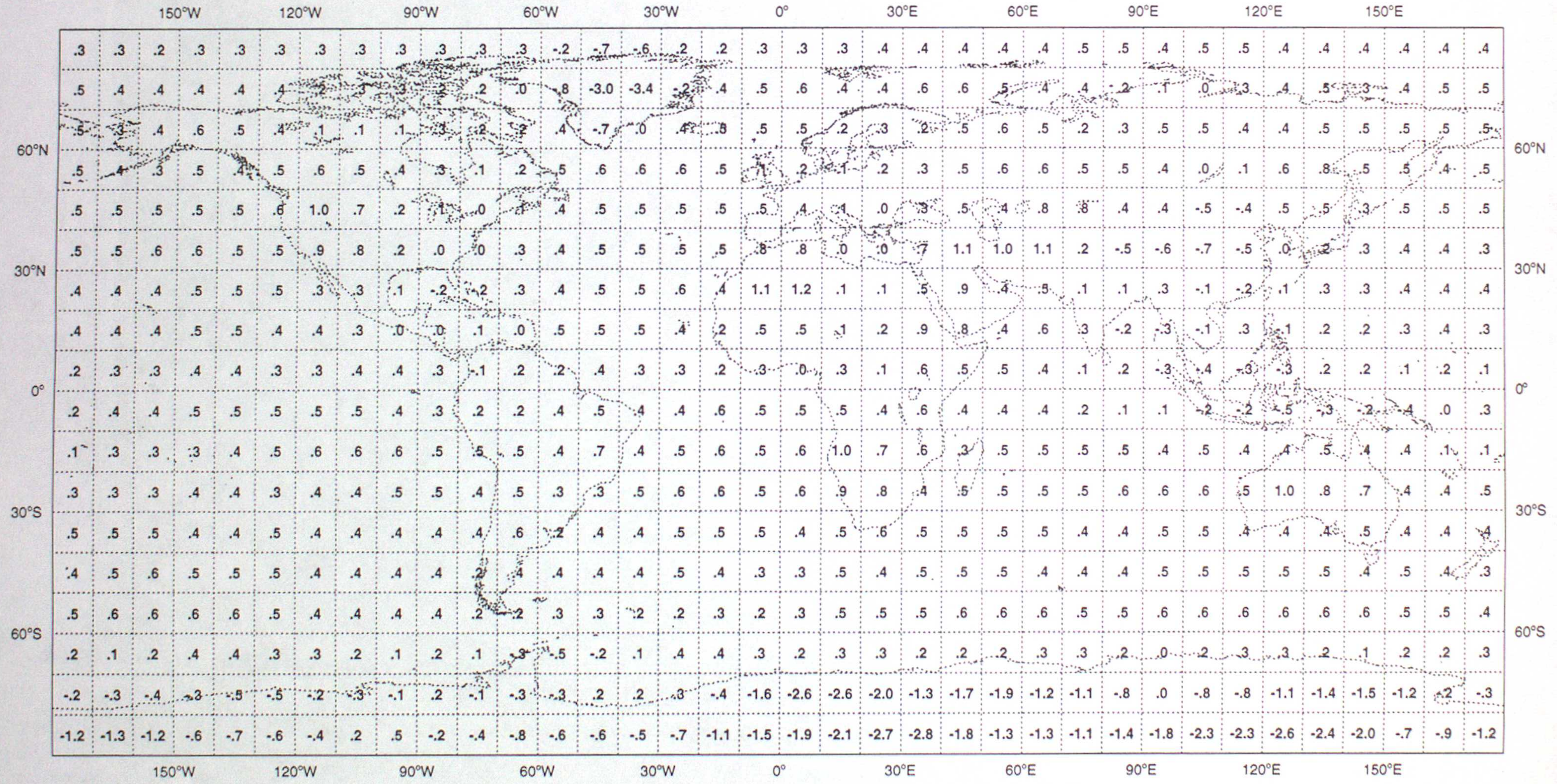


Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 -.2 -.7 -.6 .2 .2 .3 .3 .3 .4 .4 .4 .4 .4 .5 .5 .4 .5 .5 .4 .4 .4 .4 .4 .4
.5 .4 .4 .4 .4 .4 .2 .3 .3 .2 .2 .0 .8 -3.0 -3.4 -.2 .4 .5 .6 .4 .4 .6 .6 .5 .4 .4 -.2 .1 .0 .3 .4 .5 .3 .4 .5 .5
.5 .3 .4 .6 .5 .4 .1 .1 .1 .3 .2 .2 .4 -.7 .0 .4 .8 .5 .5 .2 .3 .2 .5 .6 .5 .2 .3 .5 .5 .4 .4 .5 .5 .5 .5 .5
.5 .4 .3 .5 .4 .5 .6 .5 .4 .3 .1 .2 .5 .6 .6 .6 .5 .1 .2 .1 .2 .3 .5 .6 .6 .5 .5 .4 .0 .1 .6 .8 .5 .5 .4 .5
.5 .5 .5 .5 .5 .6 1.0 .7 .2 .1 .0 .1 .4 .5 .5 .5 .5 .5 .4 .1 .0 .3 .5 .4 .8 .8 .4 .4 -.5 -.4 .5 .5 .3 .5 .5 .5
.5 .5 .6 .6 .5 .5 .9 .8 .2 .0 .0 .3 .4 .5 .5 .5 .5 .8 .8 .0 .0 .7 1.1 1.0 1.1 .2 -.5 -.6 -.7 -.5 .0 .2 .3 .4 .4 .3
.4 .4 .4 .5 .5 .5 .3 .3 .1 -.2 -.2 .3 .4 .5 .5 .6 .4 1.1 1.2 .1 .1 .5 .9 .4 .5 .1 .1 .3 -.1 -.2 .1 .3 .3 .4 .4 .4
.4 .4 .4 .5 .5 .4 .4 .3 .0 .0 .1 .0 .5 .5 .5 .4 .2 .5 .5 .1 .2 .9 .8 .4 .6 .3 -.2 -.3 -.1 .3 -.1 .2 .2 .3 .4 .3
.2 .3 .3 .4 .4 .3 .3 .4 .4 .3 -.1 .2 .2 .4 .3 .3 .2 .3 .0 .3 .1 .6 .5 .5 .4 .1 .2 -.3 -.4 -.3 -.3 .2 .2 .1 .2 .1
.2 .4 .4 .5 .5 .5 .5 .5 .4 .3 .2 .2 .4 .5 .4 .4 .6 .5 .5 .5 .4 .6 .4 .4 .4 .2 .1 .1 -.2 -.2 -.5 -.3 -.2 -.4 .0 .3
.1 .3 .3 .3 .4 .5 .6 .6 .6 .5 .5 .5 .4 .7 .4 .5 .6 .5 .6 1.0 .7 .6 .3 .5 .5 .5 .5 .4 .5 .4 .4 .5 .4 .4 .1 .1
.3 .3 .3 .4 .4 .3 .4 .4 .5 .5 .4 .5 .3 .3 .5 .6 .6 .5 .6 .9 .8 .4 .5 .5 .5 .5 .6 .6 .6 .5 1.0 .8 .7 .4 .4 .5
.5 .5 .5 .4 .4 .5 .4 .4 .4 .4 .4 .6 .2 .4 .4 .5 .5 .5 .4 .5 .6 .5 .5 .5 .5 .4 .4 .5 .5 .4 .4 .4 .5 .4 .4 .4
.4 .5 .6 .5 .5 .5 .4 .4 .4 .4 .2 .4 .4 .4 .4 .5 .4 .3 .3 .5 .4 .5 .5 .5 .4 .4 .4 .5 .5 .5 .5 .5 .4 .5 .4 .3
.5 .6 .6 .6 .6 .5 .4 .4 .4 .4 .2 .2 .3 .3 .2 .2 .3 .2 .3 .5 .5 .5 .6 .6 .6 .5 .5 .6 .6 .6 .6 .6 .6 .5 .5 .4
.2 .1 .2 .4 .4 .3 .3 .2 .1 .2 .1 .3 -.5 -.2 .1 .4 .4 .3 .2 .3 .3 .2 .2 .2 .3 .3 .2 .0 .2 .3 .3 .2 .1 .2 .2 .3
-.2 -.3 -.4 -.3 -.5 -.5 -.2 -.3 -.1 .2 -.1 -.3 -.3 .2 .2 .3 -.4 -1.6 -2.6 -2.6 -2.0 -1.3 -1.7 -1.9 -1.2 -1.1 -.8 .0 -.8 -.8 -1.1 -1.4 -1.5 -1.2 .2 -.3
-1.2 -1.3 -1.2 -.6 -.7 -.6 -.4 .2 .5 -.2 -.4 -.8 -.6 -.6 -.5 -.7 -1.1 -1.5 -1.9 -2.1 -2.7 -2.8 -1.8 -1.3 -1.3 -1.1 -1.4 -1.8 -2.3 -2.3 -2.6 -2.4 -2.0 -.7 -.9 -1.2

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001

Channel: AMSUA-5 (700 hPa)

NOAA15, using all observations

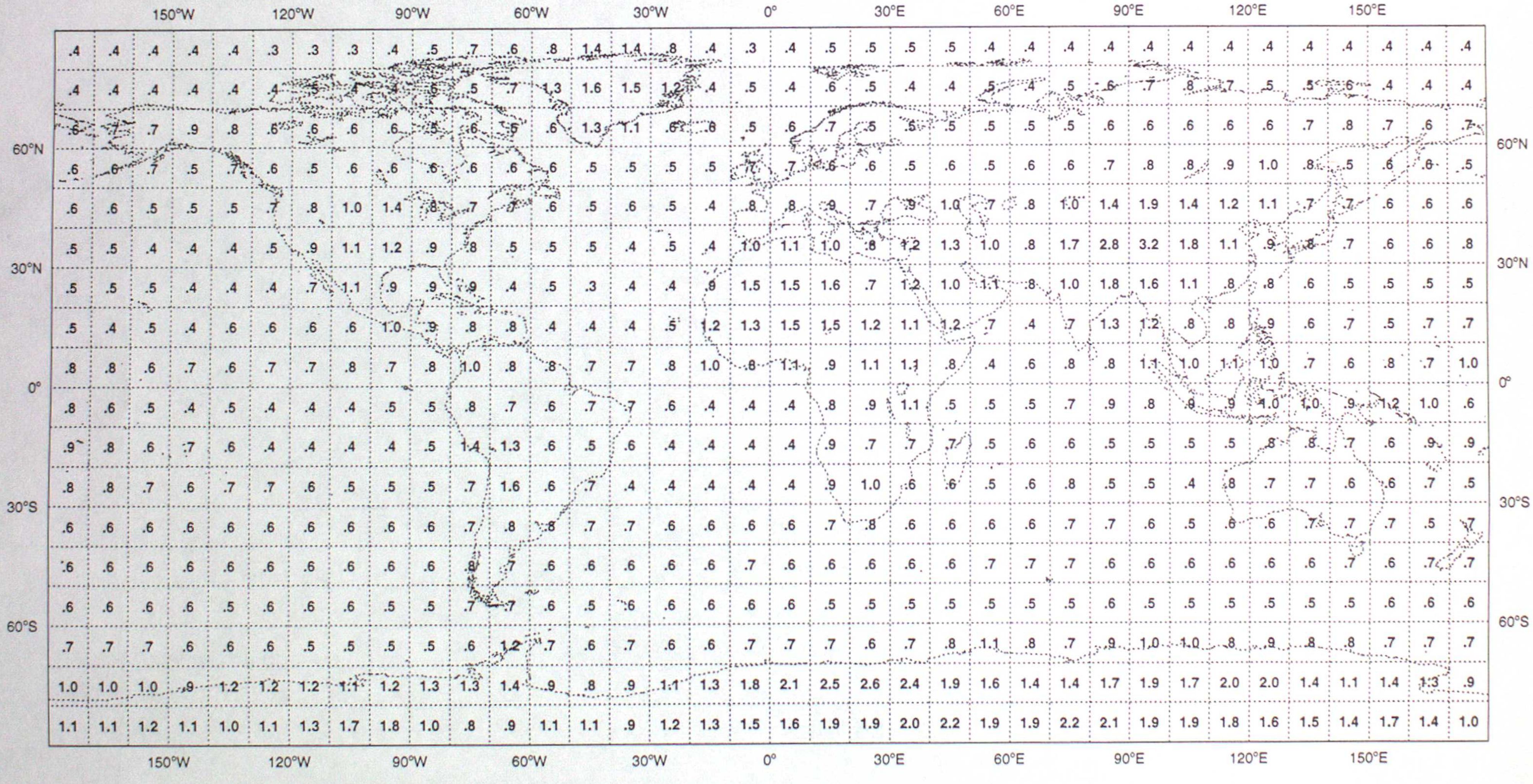

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.4 .4 .4 .4 .4 .3 .3 .3 .4 .5 .7 .6 .8 1.4 1.4 .8 .4 .3 .4 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .5 .4 .4 .6 .5 .7 1.3 1.6 1.5 1.2 .4 .5 .4 .6 .5 .4 .4 .5 .4 .5 .6 .7 .8 .7 .5 .5 .6 .4 .4 .4
.6 .7 .7 .9 .8 .6 .6 .6 .6 .5 .6 .5 .6 1.3 1.1 .6 .8 .5 .6 .7 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .6 .7 .8 .7 .6 .7
.6 .6 .7 .5 .7 .6 .5 .6 .6 .6 .6 .6 .6 .5 .5 .5 .5 .7 .7 .6 .6 .5 .6 .5 .6 .6 .7 .8 .8 .9 1.0 .8 .5 .6 .6 .5
.6 .6 .5 .5 .5 .7 .8 1.0 1.4 .8 .7 .7 .6 .5 .6 .5 .4 .8 .8 .9 .7 .9 1.0 .7 .8 1.0 1.4 1.9 1.4 1.2 1.1 .7 .7 .6 .6 .6
.5 .5 .4 .4 .4 .5 .9 1.1 1.2 .9 .8 .5 .5 .5 .4 .5 .4 1.0 1.1 1.0 .8 1.2 1.3 1.0 .8 1.7 2.8 3.2 1.8 1.1 .9 .8 .7 .6 .6 .8
.5 .5 .5 .4 .4 .4 .7 1.1 .9 .9 .9 .4 .5 .3 .4 .4 .9 1.5 1.5 1.6 .7 1.2 1.0 1.1 .8 1.0 1.8 1.6 1.1 .8 .8 .6 .5 .5 .5 .5
.5 .4 .5 .4 .6 .6 .6 .6 1.0 .9 .8 .8 .4 .4 .4 .5 1.2 1.3 1.5 1.5 1.2 1.1 1.2 .7 .4 .7 1.3 1.2 .8 .8 .9 .6 .7 .5 .7 .7
.8 .8 .6 .7 .6 .7 .7 .8 .7 .8 1.0 .8 .8 .7 .7 .8 1.0 .8 1.1 .9 1.1 1.1 .8 .4 .6 .8 .8 1.1 1.0 1.1 1.0 .7 .6 .8 .7 1.0
.8 .6 .5 .4 .5 .4 .4 .4 .5 .5 .8 .7 .6 .7 .7 .6 .4 .4 .4 .8 .9 1.1 .5 .5 .5 .7 .9 .8 .9 .9 1.0 1.0 .9 1.2 1.0 .6
.9 .8 .6 .7 .6 .4 .4 .4 .4 .5 1.4 1.3 .6 .5 .6 .4 .4 .4 .4 .9 .7 .7 .7 .5 .6 .6 .5 .5 .5 .5 .8 .8 .7 .6 .9 .9
.8 .8 .7 .6 .7 .7 .6 .5 .5 .5 .7 1.6 .6 .7 .4 .4 .4 .4 .4 .9 1.0 .6 .6 .5 .6 .8 .5 .5 .4 .8 .7 .7 .6 .6 .7 .5
.6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .7 .8 .8 .7 .7 .6 .6 .6 .6 .7 .8 .6 .6 .6 .6 .7 .7 .6 .5 .6 .6 .7 .7 .7 .5 .7
.6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .8 .7 .6 .6 .6 .6 .6 .7 .6 .6 .6 .6 .6 .7 .7 .7 .6 .6 .6 .6 .6 .6 .7 .6 .7 .7
.6 .6 .6 .6 .5 .6 .6 .6 .5 .5 .7 .7 .6 .5 .6 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .6 .6 .6
.7 .7 .7 .6 .6 .6 .5 .5 .5 .5 .6 1.2 .7 .6 .7 .6 .6 .7 .7 .7 .6 .7 .8 1.1 .8 .7 .9 1.0 1.0 .8 .9 .8 .8 .7 .7 .7
1.0 1.0 1.0 .9 1.2 1.2 1.2 1.1 1.2 1.3 1.3 1.4 .9 .8 .9 1.1 1.3 1.8 2.1 2.5 2.6 2.4 1.9 1.6 1.4 1.4 1.7 1.9 1.7 2.0 2.0 1.4 1.1 1.4 1.3 .9
1.1 1.1 1.2 1.1 1.0 1.1 1.3 1.7 1.8 1.0 .8 .9 1.1 1.1 .9 1.2 1.3 1.5 1.6 1.9 1.9 2.0 2.2 1.9 1.9 2.2 2.1 1.9 1.9 1.8 1.6 1.5 1.4 1.7 1.4 1.0

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

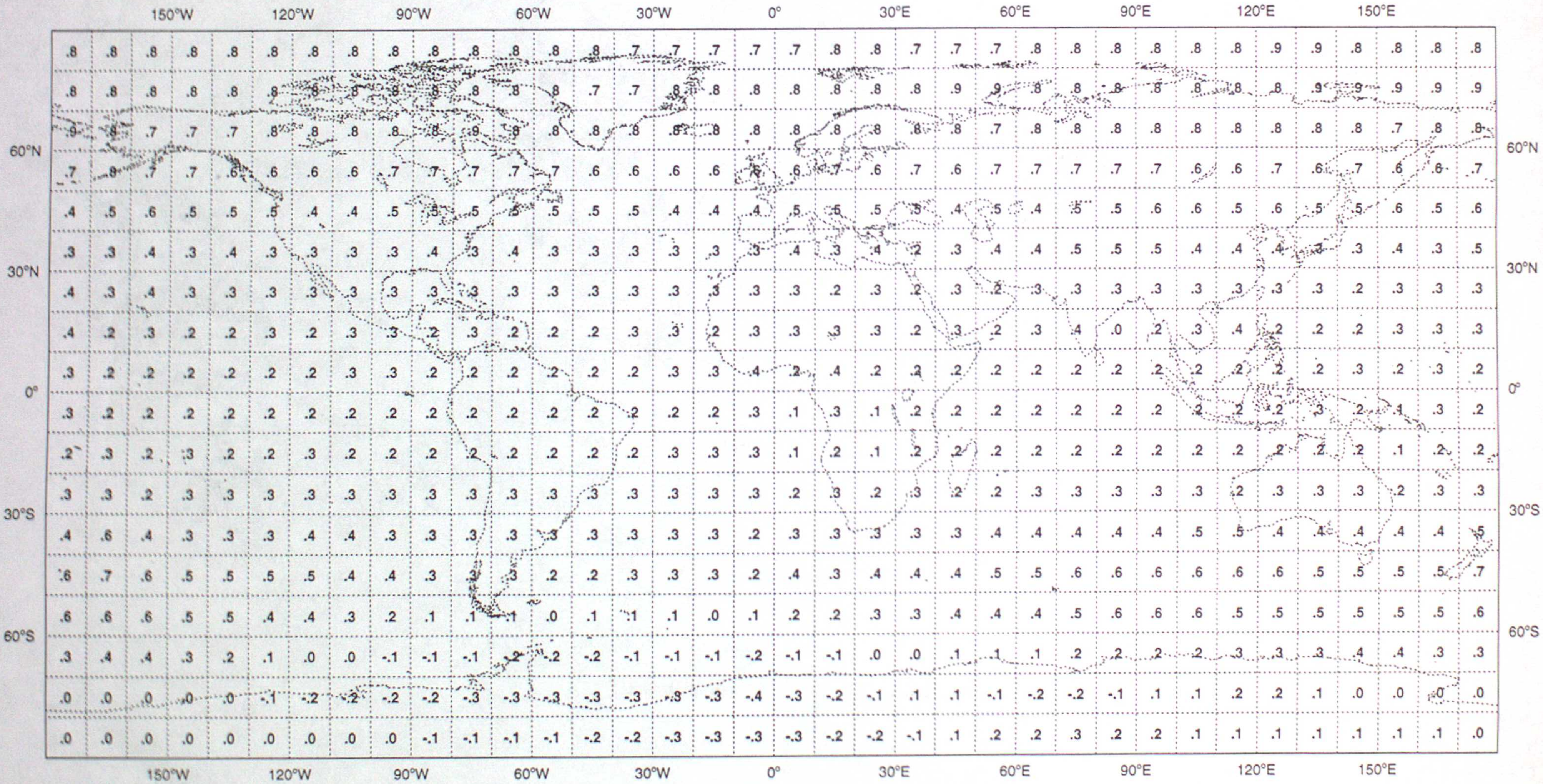

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .7 .7 .7 .7 .7 .8 .8 .7 .7 .7 .8 .8 .8 .8 .8 .8 .9 .9 .8 .8 .8 .8
.8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .7 .7 .8 .8 .8 .8 .8 .8 .8 .9 .9 .8 .8 .8 .8 .8 .8 .8 .9 .9 .9 .9 .9
.9 .8 .7 .7 .7 .8 .8 .8 .8 .8 .9 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .7 .8 .8 .8 .8 .8 .8 .8 .8 .8 .7 .8 .8
.7 .8 .7 .7 .6 .6 .6 .6 .7 .7 .7 .7 .7 .6 .6 .6 .6 .6 .6 .7 .6 .7 .6 .7 .7 .7 .7 .7 .6 .6 .7 .6 .7 .6 .6 .7
.4 .5 .6 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .5 .5 .5 .5 .4 .5 .4 .5 .5 .6 .6 .5 .6 .5 .5 .6 .5 .6
.3 .3 .4 .3 .4 .3 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .3 .4 .3 .4 .2 .3 .4 .4 .5 .5 .5 .4 .4 .4 .3 .3 .4 .3 .5
.4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .2 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .3 .3
.4 .2 .3 .2 .2 .3 .2 .3 .3 .2 .3 .2 .2 .2 .3 .3 .2 .3 .3 .3 .3 .2 .3 .2 .3 .4 .0 .2 .3 .4 .2 .2 .2 .3 .3 .3
.3 .2 .2 .2 .2 .2 .2 .3 .3 .2 .2 .2 .2 .2 .2 .3 .3 .4 .2 .4 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .3 .2
.3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .1 .3 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .1 .3 .2
.2 .3 .2 .3 .2 .2 .3 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3 .1 .2 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .2 .2
.3 .3 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .2 .3 .2 .2 .3 .3 .3 .3 .3 .2 .3 .3 .3 .2 .3 .3
.4 .6 .4 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .5
.6 .7 .6 .5 .5 .5 .5 .4 .4 .3 .3 .3 .2 .2 .3 .3 .3 .2 .4 .3 .4 .4 .4 .5 .5 .6 .6 .6 .6 .6 .6 .5 .5 .5 .5 .7
.6 .6 .6 .5 .5 .4 .4 .3 .2 .1 .1 .1 .0 .1 .1 .1 .0 .1 .2 .2 .3 .3 .4 .4 .4 .5 .6 .6 .6 .5 .5 .5 .5 .5 .5 .6
.3 .4 .4 .3 .2 .1 .0 .0 -.1 -.1 -.1 -.2 -.2 -.2 -.1 -.1 -.1 -.2 -.1 -.1 .0 .0 .1 .1 .1 .2 .2 .2 .2 .3 .3 .3 .4 .4 .3 .3
.0 .0 .0 .0 .0 -.1 -.2 -.2 -.2 -.2 -.3 -.3 -.3 -.3 -.3 -.3 -.3 -.4 -.3 -.2 -.1 .1 .1 -.1 -.2 -.2 -.1 .1 .1 .2 .2 .1 .0 .0 .0 .0
.0 .0 .0 .0 .0 .0 .0 .0 .0 -.1 -.1 -.1 -.1 -.2 -.2 -.3 -.3 -.3 -.3 -.2 -.2 -.1 .1 .2 .2 .3 .2 .2 .1 .1 .1 .1 .1 .1 .1 .0

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

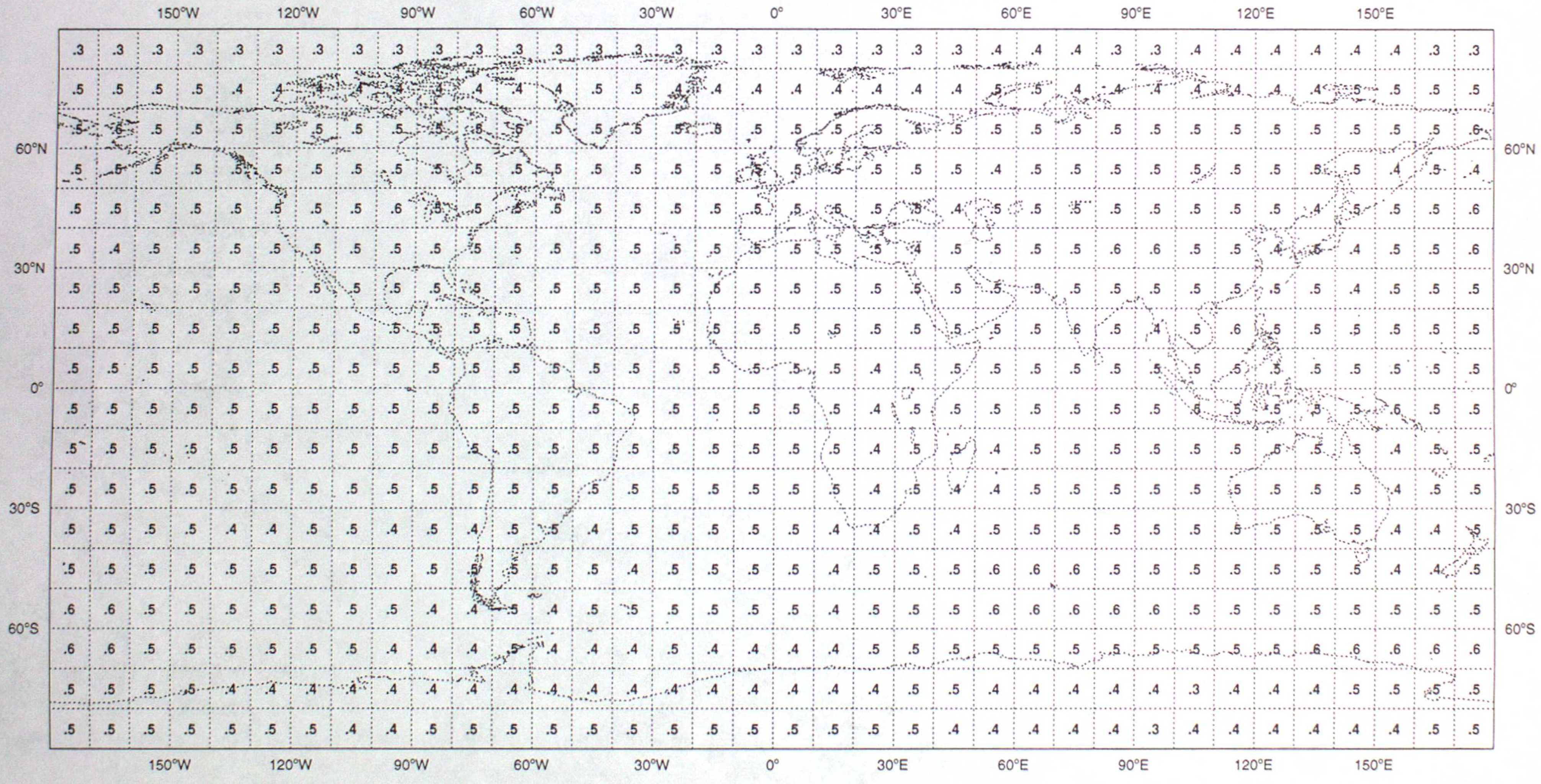
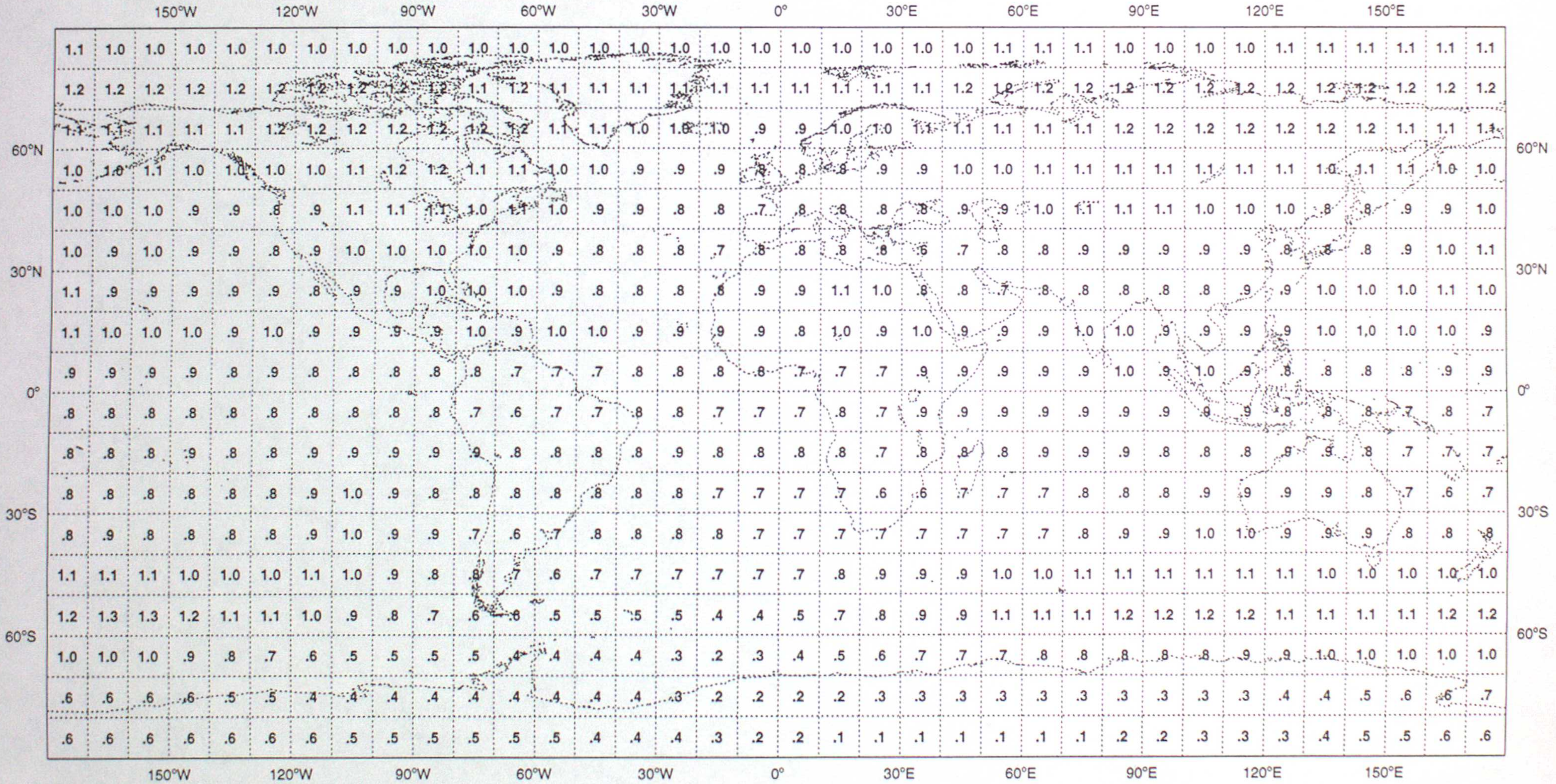

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001

Channel: AMSUA-9 (100 hPa)

NOAA15, using all observations



1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	.9	.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1
1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.1	1.1	1.0	1.0	.9	.9	.9	.8	.8	.8	.9	.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.1	1.1	1.0	1.0
1.0	1.0	1.0	.9	.9	.8	.9	1.1	1.1	1.1	1.0	1.1	1.0	.9	.9	.8	.8	.7	.8	.8	.8	.8	.9	.9	1.0	1.1	1.1	1.1	1.0	1.0	1.0	.8	.8	.9	.9	1.0
1.0	.9	1.0	.9	.9	.8	.9	1.0	1.0	1.0	1.0	1.0	.9	.8	.8	.8	.7	.8	.8	.8	.8	.6	.7	.8	.8	.9	.9	.9	.9	.9	.8	.8	.8	.9	1.0	1.1
1.1	.9	.9	.9	.9	.9	.8	.9	.9	1.0	1.0	1.0	.9	.8	.8	.8	.8	.9	.9	1.1	1.0	.8	.8	.7	.8	.8	.8	.8	.8	.9	.9	1.0	1.0	1.0	1.1	1.0
1.1	1.0	1.0	1.0	.9	1.0	.9	.9	.9	.9	1.0	.9	1.0	1.0	.9	.9	.9	.9	.8	1.0	.9	1.0	.9	.9	.9	1.0	1.0	.9	.9	.9	.9	1.0	1.0	1.0	1.0	.9
.9	.9	.9	.9	.8	.9	.8	.8	.8	.8	.8	.7	.7	.7	.8	.8	.8	.8	.7	.7	.7	.9	.9	.9	.9	.9	1.0	.9	1.0	.9	.8	.8	.8	.8	.9	.9
.8	.8	.8	.8	.8	.8	.8	.8	.8	.8	.7	.6	.7	.7	.8	.8	.7	.7	.7	.8	.7	.9	.9	.9	.9	.9	.9	.9	.9	.9	.8	.8	.8	.7	.8	.7
.8	.8	.8	.9	.8	.8	.9	.9	.9	.9	.9	.8	.8	.8	.8	.9	.8	.8	.8	.8	.7	.8	.8	.8	.9	.9	.9	.8	.8	.8	.9	.9	.8	.7	.7	.7
.8	.8	.8	.8	.8	.8	.9	1.0	.9	.8	.8	.8	.8	.8	.8	.8	.7	.7	.7	.7	.6	.6	.7	.7	.7	.8	.8	.8	.9	.9	.9	.9	.8	.7	.6	.7
.8	.9	.8	.8	.8	.8	.9	1.0	.9	.9	.7	.6	.7	.8	.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.8	.9	.9	1.0	1.0	.9	.9	.9	.8	.8	.8
1.1	1.1	1.1	1.0	1.0	1.0	1.1	1.0	.9	.8	.8	.7	.6	.7	.7	.7	.7	.7	.7	.8	.9	.9	.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0
1.2	1.3	1.3	1.2	1.1	1.1	1.0	.9	.8	.7	.6	.6	.5	.5	.5	.5	.4	.4	.5	.7	.8	.9	.9	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.2
1.0	1.0	1.0	.9	.8	.7	.6	.5	.5	.5	.5	.4	.4	.4	.4	.3	.2	.3	.4	.5	.6	.7	.7	.7	.8	.8	.8	.8	.8	.9	.9	1.0	1.0	1.0	1.0	1.0
.6	.6	.6	.6	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.2	.2	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.5	.6	.6	.7
.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5	.4	.4	.4	.3	.2	.2	.1	.1	.1	.1	.1	.1	.1	.2	.2	.3	.3	.3	.4	.5	.5	.6	.6

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

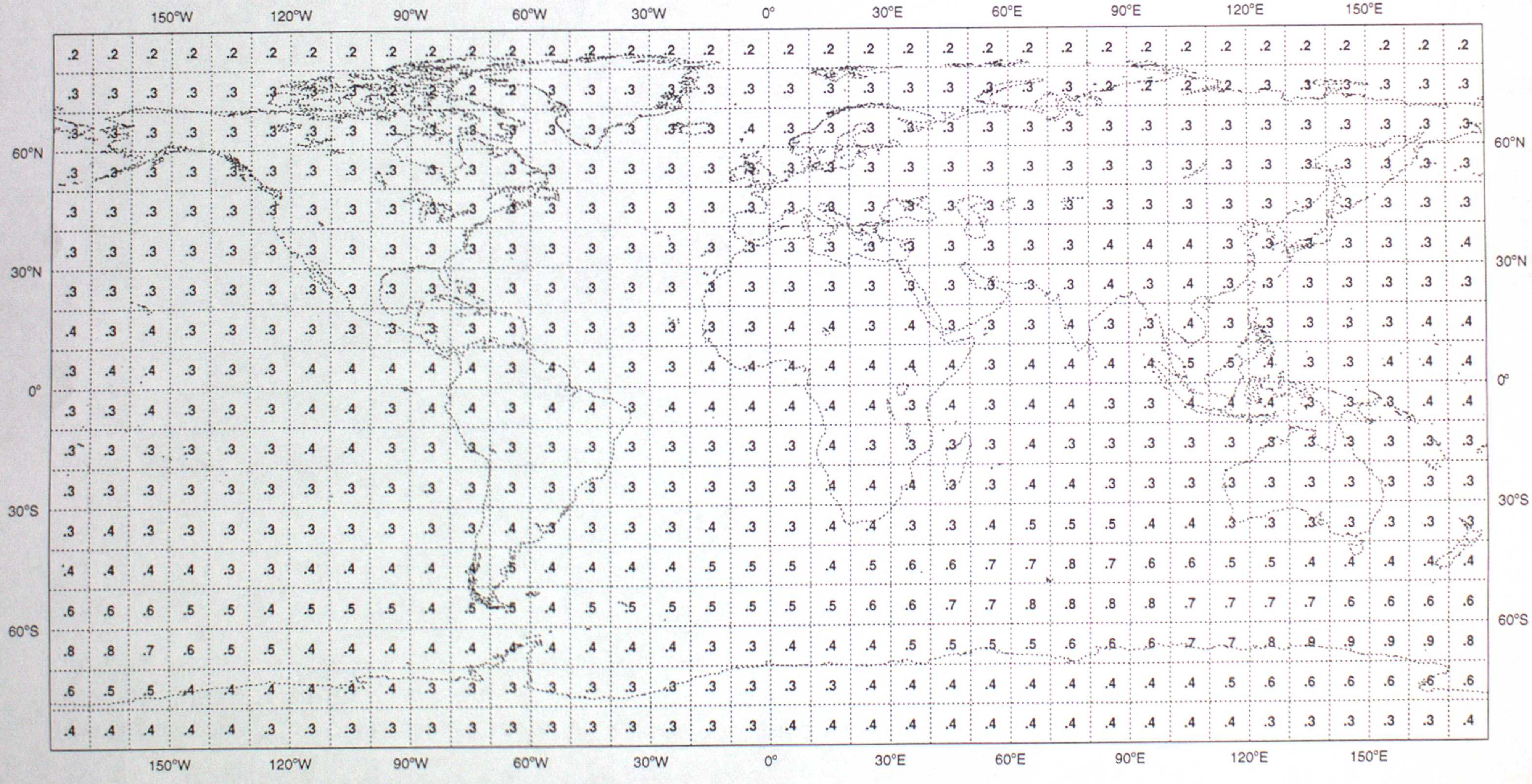
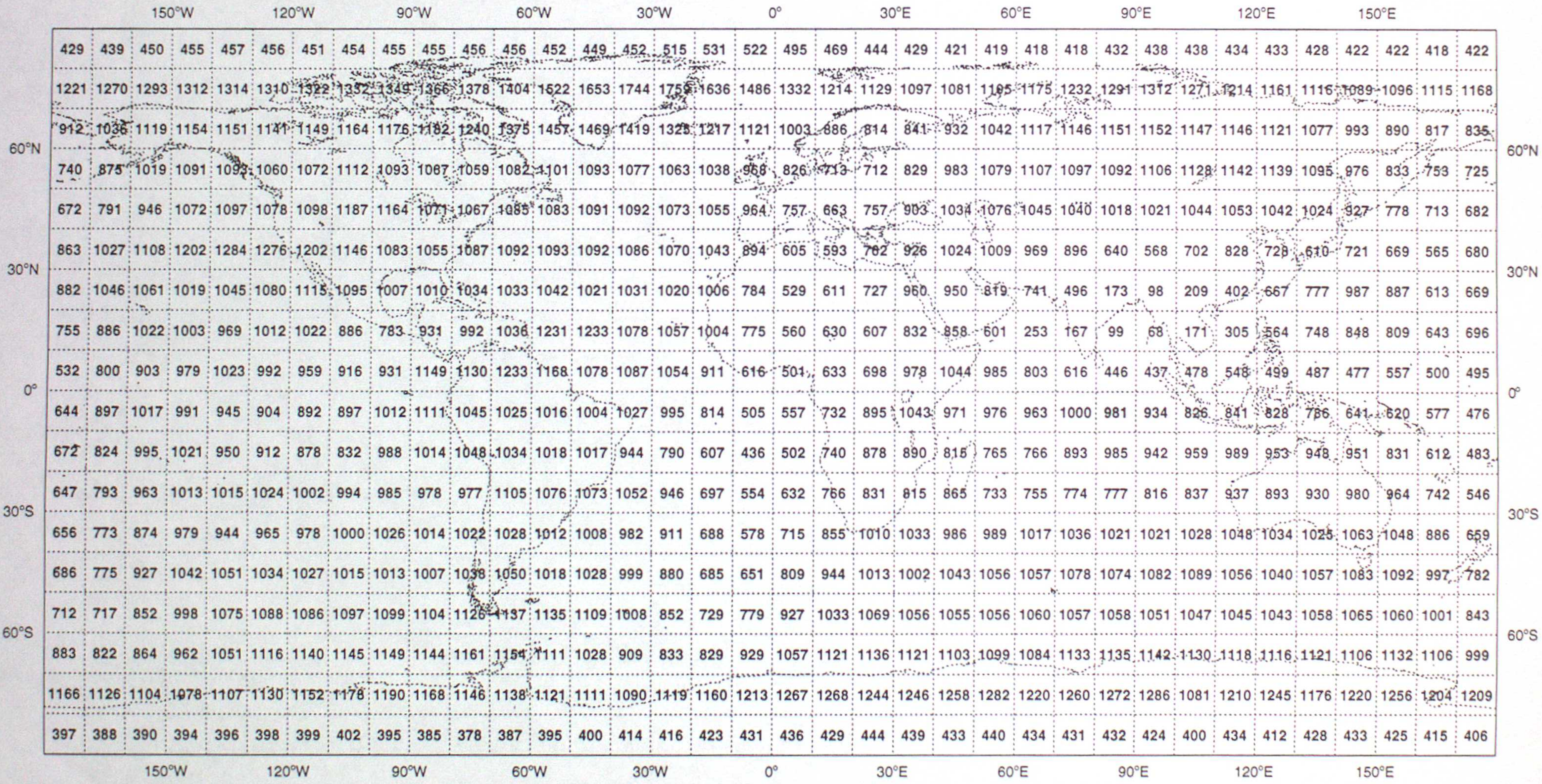

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 40. ATOVS mean daily count. JUNE 2001
NOAA16, using all observations
Global average number of observations in 24 hours = 587851

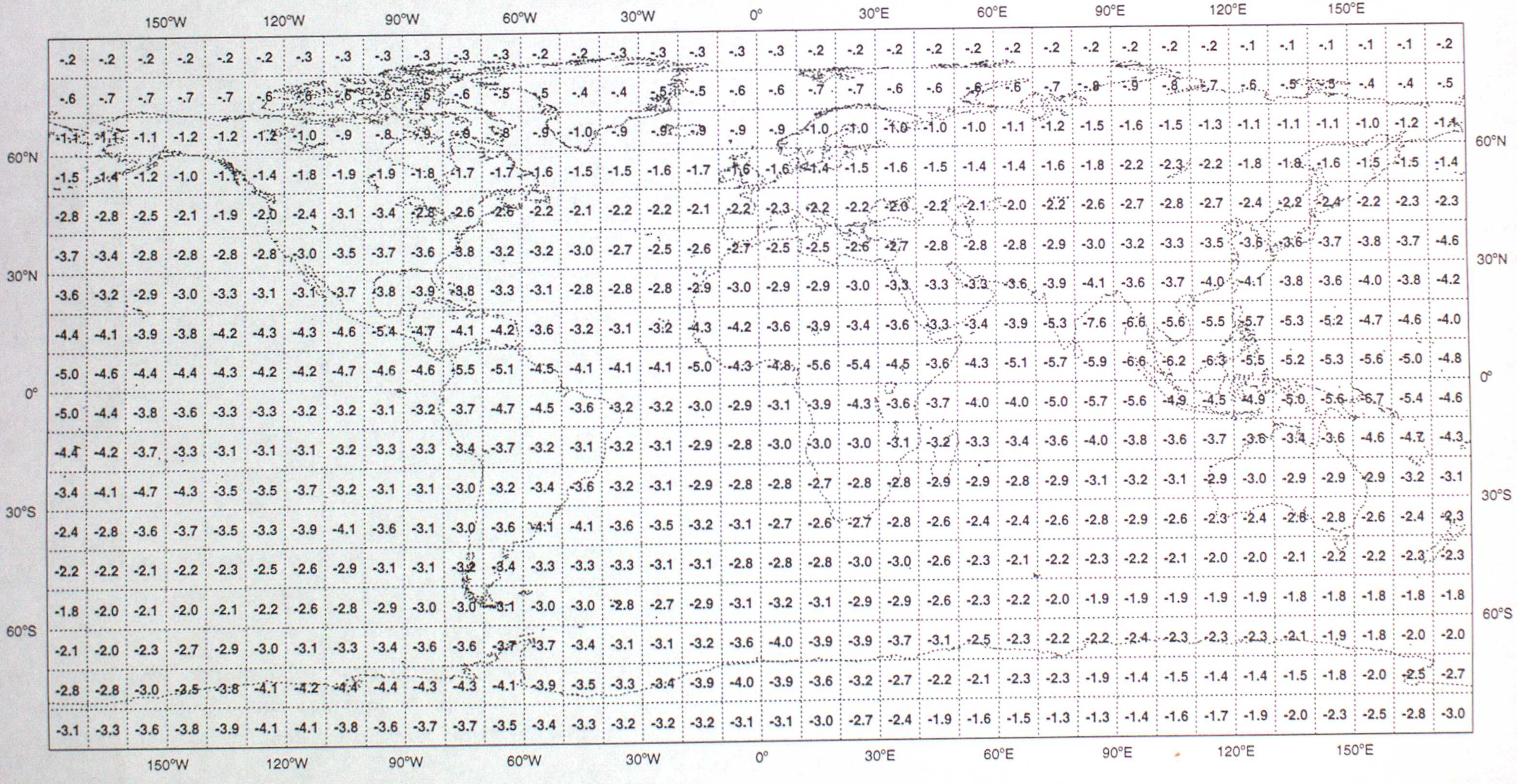


429	439	450	455	457	456	451	454	455	455	456	456	452	449	452	515	531	522	495	469	444	429	421	419	418	418	432	438	438	434	433	428	422	422	418	422
1221	1270	1293	1312	1314	1310	1322	1332	1349	1366	1378	1404	1522	1653	1744	1759	1636	1486	1332	1214	1129	1097	1081	1195	1175	1232	1291	1312	1271	1214	1161	1116	1089	1096	1115	1168
912	1036	1119	1154	1151	1141	1149	1164	1176	1182	1240	1375	1457	1469	1419	1325	1217	1121	1003	886	814	841	932	1042	1117	1146	1151	1152	1147	1146	1121	1077	993	890	817	835
740	875	1019	1091	1093	1060	1072	1112	1093	1067	1059	1082	1101	1093	1077	1063	1038	968	826	713	712	829	983	1079	1107	1097	1092	1106	1128	1142	1139	1095	976	833	753	725
672	791	946	1072	1097	1078	1098	1187	1164	1071	1067	1085	1083	1091	1092	1073	1055	964	757	663	757	903	1034	1076	1045	1040	1018	1021	1044	1053	1042	1024	927	778	713	682
863	1027	1108	1202	1284	1276	1202	1146	1083	1055	1087	1092	1093	1092	1086	1070	1043	894	605	593	762	926	1024	1009	969	896	640	568	702	828	728	610	721	669	565	680
882	1046	1061	1019	1045	1080	1115	1095	1007	1010	1034	1033	1042	1021	1031	1020	1006	784	529	611	727	960	950	819	741	496	173	98	209	402	667	777	987	887	613	669
755	886	1022	1003	969	1012	1022	886	783	931	992	1036	1231	1233	1078	1057	1004	775	560	630	607	832	858	601	253	167	99	68	171	305	564	748	848	809	643	696
532	800	903	979	1023	992	959	916	931	1149	1130	1233	1168	1078	1087	1054	911	616	501	633	698	978	1044	985	803	616	446	437	478	548	499	487	477	557	500	495
644	897	1017	991	945	904	892	897	1012	1111	1045	1025	1016	1004	1027	995	814	505	557	732	895	1043	971	976	963	1000	981	934	826	841	828	786	641	620	577	476
672	824	995	1021	950	912	878	832	988	1014	1048	1034	1018	1017	944	790	607	436	502	740	878	890	815	765	766	893	985	942	959	989	953	948	951	831	612	483
647	793	963	1013	1015	1024	1002	994	985	978	977	1105	1076	1073	1052	946	697	554	632	766	831	815	865	733	755	774	777	816	837	937	893	930	980	964	742	546
656	773	874	979	944	965	978	1000	1026	1014	1022	1028	1012	1008	982	911	688	578	715	855	1010	1033	986	989	1017	1036	1021	1021	1028	1048	1034	1025	1063	1048	886	659
686	775	927	1042	1051	1034	1027	1015	1013	1007	1038	1050	1018	1028	999	880	685	651	809	944	1013	1002	1043	1056	1057	1078	1074	1082	1089	1056	1040	1057	1083	1092	997	782
712	717	852	998	1075	1088	1086	1097	1099	1104	1126	1137	1135	1109	1008	852	729	779	927	1033	1069	1056	1055	1056	1060	1057	1058	1051	1047	1045	1043	1058	1065	1060	1001	843
883	822	864	962	1051	1116	1140	1145	1149	1144	1161	1154	1111	1028	909	833	829	929	1057	1121	1136	1121	1103	1099	1084	1133	1135	1142	1130	1118	1116	1121	1106	1132	1106	999
1166	1126	1104	1078	1107	1130	1152	1178	1190	1168	1146	1138	1121	1111	1090	1119	1160	1213	1267	1268	1244	1246	1258	1282	1220	1260	1272	1286	1081	1210	1245	1176	1220	1256	1204	1209
397	388	390	394	396	398	399	402	395	385	378	387	395	400	414	416	423	431	436	429	444	439	433	440	434	431	432	424	400	434	412	428	433	425	415	406

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001

Channel: HIRS8 (Surface)

NOAA16, using all observations

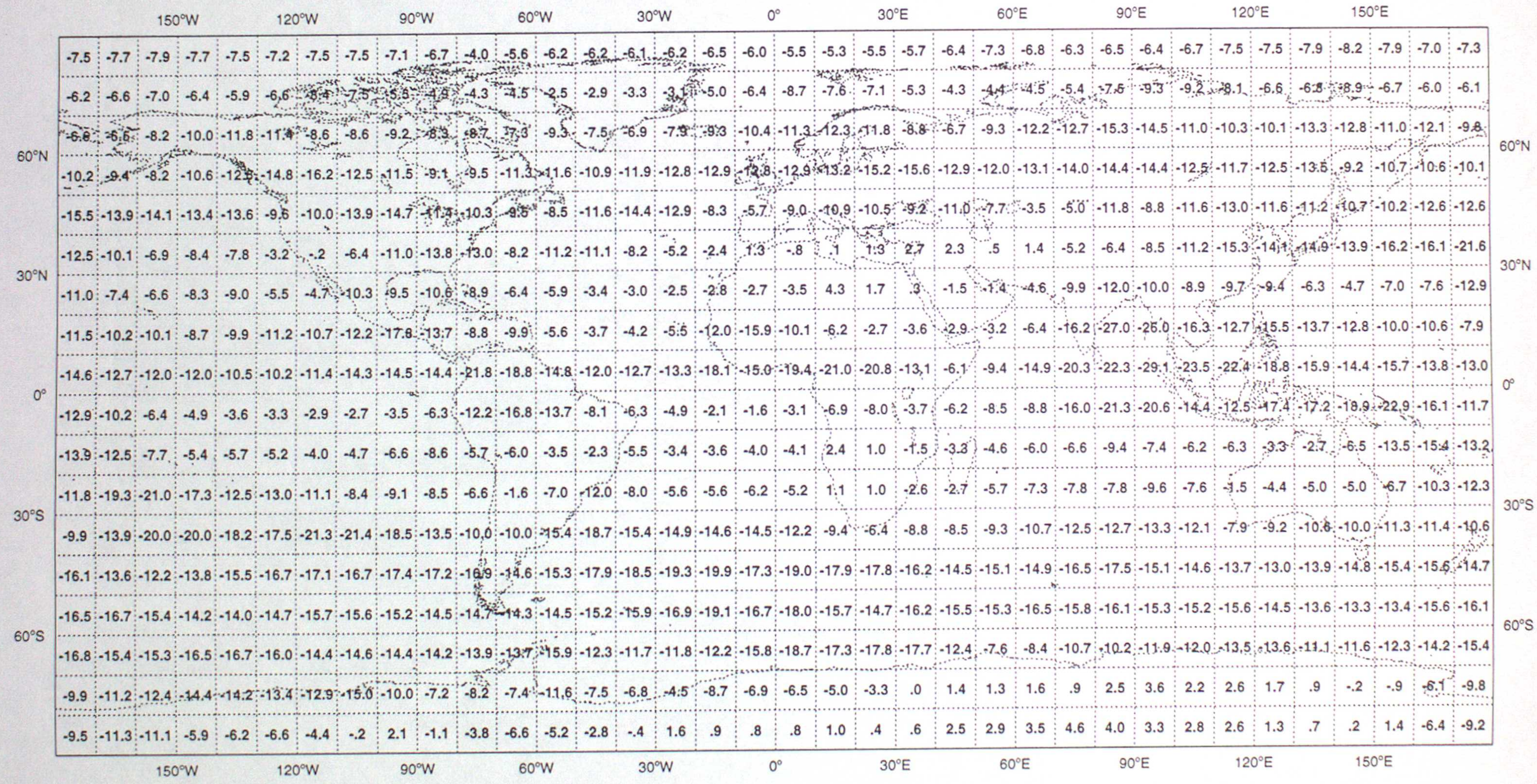


-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.1	-.2
-.6	-.7	-.7	-.7	-.7	-.6	-.6	-.6	-.5	-.5	-.6	-.5	-.5	-.4	-.4	-.5	-.5	-.6	-.6	-.7	-.7	-.6	-.6	-.6	-.6	-.7	-.8	-.9	-.8	-.7	-.6	-.5	-.5	-.4	-.4	-.5
-1.1	-1.1	-1.1	-1.2	-1.2	-1.2	-1.0	-.9	-.8	-.9	-.8	-.8	-.9	-1.0	-.9	-.9	-.9	-.9	-.9	-1.0	-1.0	-1.0	-1.0	-1.0	-1.1	-1.2	-1.5	-1.6	-1.5	-1.3	-1.1	-1.1	-1.1	-1.0	-1.2	-1.4
-1.5	-1.4	-1.2	-1.0	-1.1	-1.4	-1.8	-1.9	-1.9	-1.8	-1.7	-1.7	-1.6	-1.5	-1.5	-1.6	-1.7	-1.6	-1.6	-1.4	-1.5	-1.6	-1.5	-1.4	-1.4	-1.6	-1.8	-2.2	-2.3	-2.2	-1.8	-1.8	-1.6	-1.5	-1.5	-1.4
-2.8	-2.8	-2.5	-2.1	-1.9	-2.0	-2.4	-3.1	-3.4	-2.8	-2.6	-2.6	-2.2	-2.1	-2.2	-2.2	-2.1	-2.2	-2.3	-2.2	-2.2	-2.0	-2.2	-2.1	-2.0	-2.2	-2.6	-2.7	-2.8	-2.7	-2.4	-2.2	-2.4	-2.2	-2.3	-2.3
-3.7	-3.4	-2.8	-2.8	-2.8	-2.8	-3.0	-3.5	-3.7	-3.6	-3.8	-3.2	-3.2	-3.0	-2.7	-2.5	-2.6	-2.7	-2.5	-2.5	-2.6	-2.7	-2.8	-2.8	-2.8	-2.9	-3.0	-3.2	-3.3	-3.5	-3.6	-3.6	-3.7	-3.8	-3.7	-4.6
-3.6	-3.2	-2.9	-3.0	-3.3	-3.1	-3.1	-3.7	-3.8	-3.9	-3.8	-3.3	-3.1	-2.8	-2.8	-2.8	-2.9	-3.0	-2.9	-2.9	-3.0	-3.3	-3.3	-3.3	-3.6	-3.9	-4.1	-3.6	-3.7	-4.0	-4.1	-3.8	-3.6	-4.0	-3.8	-4.2
-4.4	-4.1	-3.9	-3.8	-4.2	-4.3	-4.3	-4.6	-5.4	-4.7	-4.1	-4.2	-3.6	-3.2	-3.1	-3.2	-4.3	-4.2	-3.6	-3.9	-3.4	-3.6	-3.3	-3.4	-3.9	-5.3	-7.6	-6.6	-5.6	-5.5	-5.7	-5.3	-5.2	-4.7	-4.6	-4.0
-5.0	-4.6	-4.4	-4.4	-4.3	-4.2	-4.2	-4.7	-4.6	-4.6	-5.5	-5.1	-4.5	-4.1	-4.1	-4.1	-5.0	-4.3	-4.8	-5.6	-5.4	-4.5	-3.6	-4.3	-5.1	-5.7	-5.9	-6.6	-6.2	-6.3	-5.5	-5.2	-5.3	-5.6	-5.0	-4.8
-5.0	-4.4	-3.8	-3.6	-3.3	-3.3	-3.2	-3.2	-3.1	-3.2	-3.7	-4.7	-4.5	-3.6	-3.2	-3.2	-3.0	-2.9	-3.1	-3.9	-4.3	-3.6	-3.7	-4.0	-4.0	-5.0	-5.7	-5.6	-4.9	-4.5	-4.9	-5.0	-5.6	-6.7	-5.4	-4.6
-4.4	-4.2	-3.7	-3.3	-3.1	-3.1	-3.1	-3.2	-3.3	-3.3	-3.4	-3.7	-3.2	-3.1	-3.2	-3.1	-2.9	-2.8	-3.0	-3.0	-3.0	-3.1	-3.2	-3.3	-3.4	-3.6	-4.0	-3.8	-3.6	-3.7	-3.6	-3.4	-3.6	-4.6	-4.7	-4.3
-3.4	-4.1	-4.7	-4.3	-3.5	-3.5	-3.7	-3.2	-3.1	-3.1	-3.0	-3.2	-3.4	-3.6	-3.2	-3.1	-2.9	-2.8	-2.8	-2.7	-2.8	-2.8	-2.9	-2.9	-2.8	-2.9	-3.1	-3.2	-3.1	-2.9	-3.0	-2.9	-2.9	-2.9	-3.2	-3.1
-2.4	-2.8	-3.6	-3.7	-3.5	-3.3	-3.9	-4.1	-3.6	-3.1	-3.0	-3.6	-4.1	-4.1	-3.6	-3.5	-3.2	-3.1	-2.7	-2.6	-2.7	-2.8	-2.6	-2.4	-2.4	-2.6	-2.8	-2.9	-2.6	-2.3	-2.4	-2.6	-2.8	-2.6	-2.4	-2.3
-2.2	-2.2	-2.1	-2.2	-2.3	-2.5	-2.6	-2.9	-3.1	-3.1	-3.2	-3.4	-3.3	-3.3	-3.3	-3.1	-3.1	-2.8	-2.8	-2.8	-3.0	-3.0	-2.6	-2.3	-2.1	-2.2	-2.3	-2.2	-2.1	-2.0	-2.0	-2.1	-2.2	-2.2	-2.3	-2.3
-1.8	-2.0	-2.1	-2.0	-2.1	-2.2	-2.6	-2.8	-2.9	-3.0	-3.0	-3.1	-3.0	-3.0	-2.8	-2.7	-2.9	-3.1	-3.2	-3.1	-2.9	-2.9	-2.6	-2.3	-2.2	-2.0	-1.9	-1.9	-1.9	-1.9	-1.9	-1.8	-1.8	-1.8	-1.8	-1.8
-2.1	-2.0	-2.3	-2.7	-2.9	-3.0	-3.1	-3.3	-3.4	-3.6	-3.6	-3.7	-3.7	-3.4	-3.1	-3.1	-3.2	-3.6	-4.0	-3.9	-3.9	-3.7	-3.1	-2.5	-2.3	-2.2	-2.2	-2.4	-2.3	-2.3	-2.3	-2.1	-1.9	-1.8	-2.0	-2.0
-2.8	-2.8	-3.0	-3.5	-3.8	-4.1	-4.2	-4.4	-4.4	-4.3	-4.3	-4.1	-3.9	-3.5	-3.3	-3.4	-3.9	-4.0	-3.9	-3.6	-3.2	-2.7	-2.2	-2.1	-2.3	-2.3	-1.9	-1.4	-1.5	-1.4	-1.4	-1.5	-1.8	-2.0	-2.5	-2.7
-3.1	-3.3	-3.6	-3.8	-3.9	-4.1	-4.1	-3.8	-3.6	-3.7	-3.7	-3.5	-3.4	-3.3	-3.2	-3.2	-3.2	-3.1	-3.1	-3.0	-2.7	-2.4	-1.9	-1.6	-1.5	-1.3	-1.3	-1.4	-1.6	-1.7	-1.9	-2.0	-2.3	-2.5	-2.8	-3.0

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001

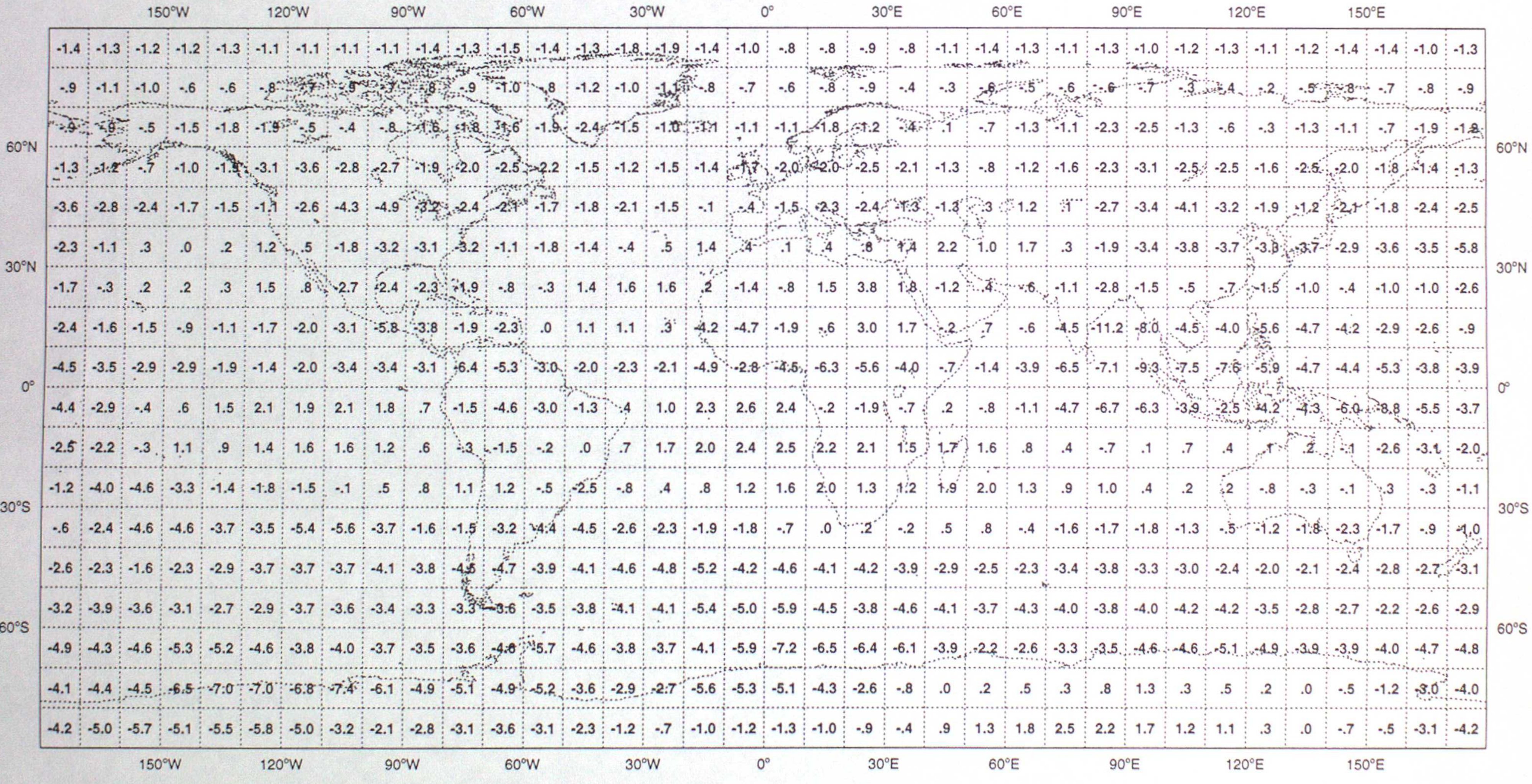
Channel: HIRS8 (Surface)

NOAA16, using all observations



-7.5	-7.7	-7.9	-7.7	-7.5	-7.2	-7.5	-7.5	-7.1	-6.7	-4.0	-5.6	-6.2	-6.2	-6.1	-6.2	-6.5	-6.0	-5.5	-5.3	-5.5	-5.7	-6.4	-7.3	-6.8	-6.3	-6.5	-6.4	-6.7	-7.5	-7.5	-7.9	-8.2	-7.9	-7.0	-7.3
-6.2	-6.6	-7.0	-6.4	-5.9	-6.6	-8.4	-7.5	-5.5	-4.9	-4.3	-4.5	-2.5	-2.9	-3.3	-3.1	-5.0	-6.4	-8.7	-7.6	-7.1	-5.3	-4.3	-4.4	-4.5	-5.4	-7.6	-9.3	-9.2	-8.1	-6.6	-6.8	-8.9	-6.7	-6.0	-6.1
-6.8	-6.6	-8.2	-10.0	-11.8	-11.4	-8.6	-8.6	-9.2	-8.3	-8.7	-7.3	-9.3	-7.5	-6.9	-7.9	-9.3	-10.4	-11.3	-12.3	-11.8	-8.8	-6.7	-9.3	-12.2	-12.7	-15.3	-14.5	-11.0	-10.3	-10.1	-13.3	-12.8	-11.0	-12.1	-9.8
-10.2	-9.4	-8.2	-10.6	-12.5	-14.8	-16.2	-12.5	-11.5	-9.1	-9.5	-11.3	-11.6	-10.9	-11.9	-12.8	-12.9	-12.8	-12.9	-13.2	-15.2	-15.6	-12.9	-12.0	-13.1	-14.0	-14.4	-14.4	-12.5	-11.7	-12.5	-13.5	-9.2	-10.7	-10.6	-10.1
-15.5	-13.9	-14.1	-13.4	-13.6	-9.6	-10.0	-13.9	-14.7	-11.4	-10.3	-9.5	-8.5	-11.6	-14.4	-12.9	-8.3	-5.7	-9.0	-10.9	-10.5	-9.2	-11.0	-7.7	-3.5	-5.0	-11.8	-8.8	-11.6	-13.0	-11.6	-11.2	-10.7	-10.2	-12.6	-12.6
-12.5	-10.1	-6.9	-8.4	-7.8	-3.2	-.2	-6.4	-11.0	-13.8	-13.0	-8.2	-11.2	-11.1	-8.2	-5.2	-2.4	1.3	-.8	.1	1.3	2.7	2.3	.5	1.4	-5.2	-6.4	-8.5	-11.2	-15.3	-14.1	-14.9	-13.9	-16.2	-16.1	-21.6
-11.0	-7.4	-6.6	-8.3	-9.0	-5.5	-4.7	-10.3	-9.5	-10.6	-8.9	-6.4	-5.9	-3.4	-3.0	-2.5	-2.8	-2.7	-3.5	4.3	1.7	.3	-1.5	-1.4	-4.6	-9.9	-12.0	-10.0	-8.9	-9.7	-9.4	-6.3	-4.7	-7.0	-7.6	-12.9
-11.5	-10.2	-10.1	-8.7	-9.9	-11.2	-10.7	-12.2	-17.8	-13.7	-8.8	-9.9	-5.6	-3.7	-4.2	-5.5	-12.0	-15.9	-10.1	-6.2	-2.7	-3.6	-2.9	-3.2	-6.4	-16.2	-27.0	-26.0	-16.3	-12.7	-15.5	-13.7	-12.8	-10.0	-10.6	-7.9
-14.6	-12.7	-12.0	-12.0	-10.5	-10.2	-11.4	-14.3	-14.5	-14.4	-21.8	-18.8	-14.8	-12.0	-12.7	-13.3	-18.1	-15.0	-19.4	-21.0	-20.8	-13.1	-6.1	-9.4	-14.9	-20.3	-22.3	-29.1	-23.5	-22.4	-18.8	-15.9	-14.4	-15.7	-13.8	-13.0
-12.9	-10.2	-6.4	-4.9	-3.6	-3.3	-2.9	-2.7	-3.5	-6.3	-12.2	-16.8	-13.7	-8.1	-6.3	-4.9	-2.1	-1.6	-3.1	-6.9	-8.0	-3.7	-6.2	-8.5	-8.8	-16.0	-21.3	-20.6	-14.4	-12.5	-17.4	-17.2	-18.9	-22.9	-16.1	-11.7
-13.9	-12.5	-7.7	-5.4	-5.7	-5.2	-4.0	-4.7	-6.6	-8.6	-5.7	-6.0	-3.5	-2.3	-5.5	-3.4	-3.6	-4.0	-4.1	2.4	1.0	-1.5	-3.3	-4.6	-6.0	-6.6	-9.4	-7.4	-6.2	-6.3	-3.3	-2.7	-6.5	-13.5	-15.4	-13.2
-11.8	-19.3	-21.0	-17.3	-12.5	-13.0	-11.1	-8.4	-9.1	-8.5	-6.6	-1.6	-7.0	-12.0	-8.0	-5.6	-5.6	-6.2	-5.2	1.1	1.0	-2.6	-2.7	-5.7	-7.3	-7.8	-7.8	-9.6	-7.6	-1.5	-4.4	-5.0	-5.0	-6.7	-10.3	-12.3
-9.9	-13.9	-20.0	-20.0	-18.2	-17.5	-21.3	-21.4	-18.5	-13.5	-10.0	-10.0	-15.4	-18.7	-15.4	-14.9	-14.6	-14.5	-12.2	-9.4	-6.4	-8.8	-8.5	-9.3	-10.7	-12.5	-12.7	-13.3	-12.1	-7.9	-9.2	-10.6	-10.0	-11.3	-11.4	-10.6
-16.1	-13.6	-12.2	-13.8	-15.5	-16.7	-17.1	-16.7	-17.4	-17.2	-16.9	-14.6	-15.3	-17.9	-18.5	-19.3	-19.9	-17.3	-19.0	-17.9	-17.8	-16.2	-14.5	-15.1	-14.9	-16.5	-17.5	-15.1	-14.6	-13.7	-13.0	-13.9	-14.8	-15.4	-15.6	-14.7
-16.5	-16.7	-15.4	-14.2	-14.0	-14.7	-15.7	-15.6	-15.2	-14.5	-14.7	-14.3	-14.5	-15.2	-15.9	-16.9	-19.1	-16.7	-18.0	-15.7	-14.7	-16.2	-15.5	-15.3	-16.5	-15.8	-16.1	-15.3	-15.2	-15.6	-14.5	-13.6	-13.3	-13.4	-15.6	-16.1
-16.8	-15.4	-15.3	-16.5	-16.7	-16.0	-14.4	-14.6	-14.4	-14.2	-13.9	-13.7	-15.9	-12.3	-11.7	-11.8	-12.2	-15.8	-18.7	-17.3	-17.8	-17.7	-12.4	-7.6	-8.4	-10.7	-10.2	-11.9	-12.0	-13.5	-13.6	-11.1	-11.6	-12.3	-14.2	-15.4
-9.9	-11.2	-12.4	-14.4	-14.2	-13.4	-12.9	-15.0	-10.0	-7.2	-8.2	-7.4	-11.6	-7.5	-6.8	-4.5	-8.7	-6.9	-6.5	-5.0	-3.3	.0	1.4	1.3	1.6	.9	2.5	3.6	2.2	2.6	1.7	.9	-.2	-.9	-6.1	-9.8
-9.5	-11.3	-11.1	-5.9	-6.2	-6.6	-4.4	-.2	2.1	-1.1	-3.8	-6.6	-5.2	-2.8	-.4	1.6	.9	.8	.8	1.0	.4	.6	2.5	2.9	3.5	4.6	4.0	3.3	2.8	2.6	1.3	.7	.2	1.4	-6.4	-9.2

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



-1.4	-1.3	-1.2	-1.2	-1.3	-1.1	-1.1	-1.1	-1.1	-1.4	-1.3	-1.5	-1.4	-1.3	-1.8	-1.9	-1.4	-1.0	-.8	-.8	-.9	-.8	-1.1	-1.4	-1.3	-1.1	-1.3	-1.0	-1.2	-1.3	-1.1	-1.2	-1.4	-1.4	-1.0	-1.3
-.9	-1.1	-1.0	-.6	-.6	-.8	-.7	-.9	-.7	-.8	-.9	-1.0	-.8	-1.2	-1.0	-1.1	-.8	-.7	-.6	-.8	-.9	-.4	-.3	-.6	-.5	-.6	-.6	-.7	-.3	-.4	-.2	-.5	-.8	-.7	-.8	-.9
-.9	-.9	-.5	-1.5	-1.8	-1.9	-.5	-.4	-.8	-1.6	-1.8	-1.6	-1.9	-2.4	-1.5	-1.0	-1.1	-1.1	-1.1	-1.8	-1.2	-.4	.1	-.7	-1.3	-1.1	-2.3	-2.5	-1.3	-.6	-.3	-1.3	-1.1	-.7	-1.9	-1.8
-1.3	-1.2	-.7	-1.0	-1.9	-3.1	-3.6	-2.8	-2.7	-1.9	-2.0	-2.5	-2.2	-1.5	-1.2	-1.5	-1.4	-1.7	-2.0	-2.0	-2.5	-2.1	-1.3	-.8	-1.2	-1.6	-2.3	-3.1	-2.5	-2.5	-1.6	-2.5	-2.0	-1.8	-1.4	-1.3
-3.6	-2.8	-2.4	-1.7	-1.5	-1.1	-2.6	-4.3	-4.9	-3.2	-2.4	-2.1	-1.7	-1.8	-2.1	-1.5	-.1	-.4	-1.5	-2.3	-2.4	-1.3	-1.3	.3	1.2	.1	-2.7	-3.4	-4.1	-3.2	-1.9	-1.2	-2.1	-1.8	-2.4	-2.5
-2.3	-1.1	.3	.0	.2	1.2	.5	-1.8	-3.2	-3.1	-3.2	-1.1	-1.8	-1.4	-.4	.5	1.4	.4	.1	.4	.8	1.4	2.2	1.0	1.7	.3	-1.9	-3.4	-3.8	-3.7	-3.3	-3.7	-2.9	-3.6	-3.5	-5.8
-1.7	-.3	.2	.2	.3	1.5	.8	-2.7	-2.4	-2.3	-1.9	-.8	-.3	1.4	1.6	1.6	.2	-1.4	-.8	1.5	3.8	1.8	-1.2	.4	-.6	-1.1	-2.8	-1.5	-.5	-.7	-1.5	-1.0	-.4	-1.0	-1.0	-2.6
-2.4	-1.6	-1.5	-.9	-1.1	-1.7	-2.0	-3.1	-5.8	-3.8	-1.9	-2.3	.0	1.1	1.1	.3	-4.2	-4.7	-1.9	-.6	3.0	1.7	-.2	.7	-.6	-4.5	-11.2	-8.0	-4.5	-4.0	-5.6	-4.7	-4.2	-2.9	-2.6	-.9
-4.5	-3.5	-2.9	-2.9	-1.9	-1.4	-2.0	-3.4	-3.4	-3.1	-6.4	-5.3	-3.0	-2.0	-2.3	-2.1	-4.9	-2.8	-4.5	-6.3	-5.6	-4.0	-.7	-1.4	-3.9	-6.5	-7.1	-9.3	-7.5	-7.6	-5.9	-4.7	-4.4	-5.3	-3.8	-3.9
-4.4	-2.9	-.4	.6	1.5	2.1	1.9	2.1	1.8	.7	-1.5	-4.6	-3.0	-1.3	.4	1.0	2.3	2.6	2.4	-.2	-1.9	-.7	.2	-.8	-1.1	-4.7	-6.7	-6.3	-3.9	-2.5	-4.2	-4.3	-6.0	-8.8	-5.5	-3.7
-2.5	-2.2	-.3	1.1	.9	1.4	1.6	1.6	1.2	.6	-.3	-1.5	-.2	.0	.7	1.7	2.0	2.4	2.5	2.2	2.1	1.5	1.7	1.6	.8	.4	-.7	.1	.7	.4	.1	.2	-.1	-2.6	-3.1	-2.0
-1.2	-4.0	-4.6	-3.3	-1.4	-1.8	-1.5	-.1	.5	.8	1.1	1.2	-.5	-2.5	-.8	.4	.8	1.2	1.6	2.0	1.3	1.2	1.9	2.0	1.3	.9	1.0	.4	.2	.2	-.8	-.3	-.1	.3	-.3	-1.1
-.6	-2.4	-4.6	-4.6	-3.7	-3.5	-5.4	-5.6	-3.7	-1.6	-1.5	-3.2	-4.4	-4.5	-2.6	-2.3	-1.9	-1.8	-.7	.0	.2	-.2	.5	.8	-.4	-1.6	-1.7	-1.8	-1.3	-.5	-1.2	-1.8	-2.3	-1.7	-.9	-1.0
-2.6	-2.3	-1.6	-2.3	-2.9	-3.7	-3.7	-3.7	-4.1	-3.8	-4.5	-4.7	-3.9	-4.1	-4.6	-4.8	-5.2	-4.2	-4.6	-4.1	-4.2	-3.9	-2.9	-2.5	-2.3	-3.4	-3.8	-3.3	-3.0	-2.4	-2.0	-2.1	-2.4	-2.8	-2.7	-3.1
-3.2	-3.9	-3.6	-3.1	-2.7	-2.9	-3.7	-3.6	-3.4	-3.3	-3.3	-3.6	-3.5	-3.8	-4.1	-4.1	-5.4	-5.0	-5.9	-4.5	-3.8	-4.6	-4.1	-3.7	-4.3	-4.0	-3.8	-4.0	-4.2	-4.2	-3.5	-2.8	-2.7	-2.2	-2.6	-2.9
-4.9	-4.3	-4.6	-5.3	-5.2	-4.6	-3.8	-4.0	-3.7	-3.5	-3.6	-4.6	-5.7	-4.6	-3.8	-3.7	-4.1	-5.9	-7.2	-6.5	-6.4	-6.1	-3.9	-2.2	-2.6	-3.3	-3.5	-4.6	-4.6	-5.1	-4.9	-3.9	-3.9	-4.0	-4.7	-4.8
-4.1	-4.4	-4.5	-6.5	-7.0	-7.0	-6.8	-7.4	-6.1	-4.9	-5.1	-4.9	-5.2	-3.6	-2.9	-2.7	-5.6	-5.3	-5.1	-4.3	-2.6	-.8	.0	.2	.5	.3	.8	1.3	.3	.5	.2	.0	-.5	-1.2	-3.0	-4.0
-4.2	-5.0	-5.7	-5.1	-5.5	-5.8	-5.0	-3.2	-2.1	-2.8	-3.1	-3.6	-3.1	-2.3	-1.2	-.7	-1.0	-1.2	-1.3	-1.0	-.9	-.4	.9	1.3	1.8	2.5	2.2	1.7	1.2	1.1	.3	.0	-.7	-.5	-3.1	-4.2

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001

Channel: HIRS15 (700 hPa)

NOAA16, using all observations

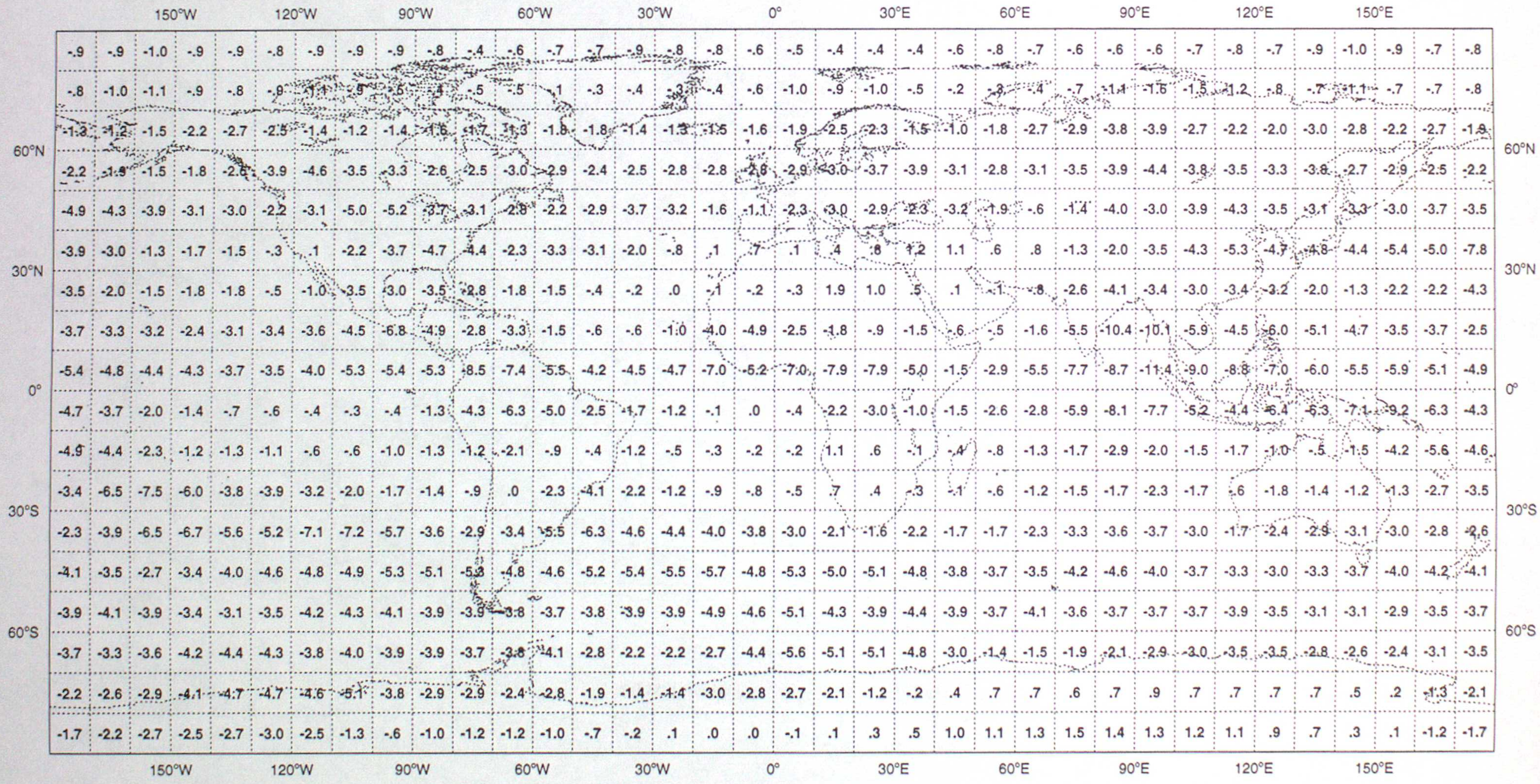
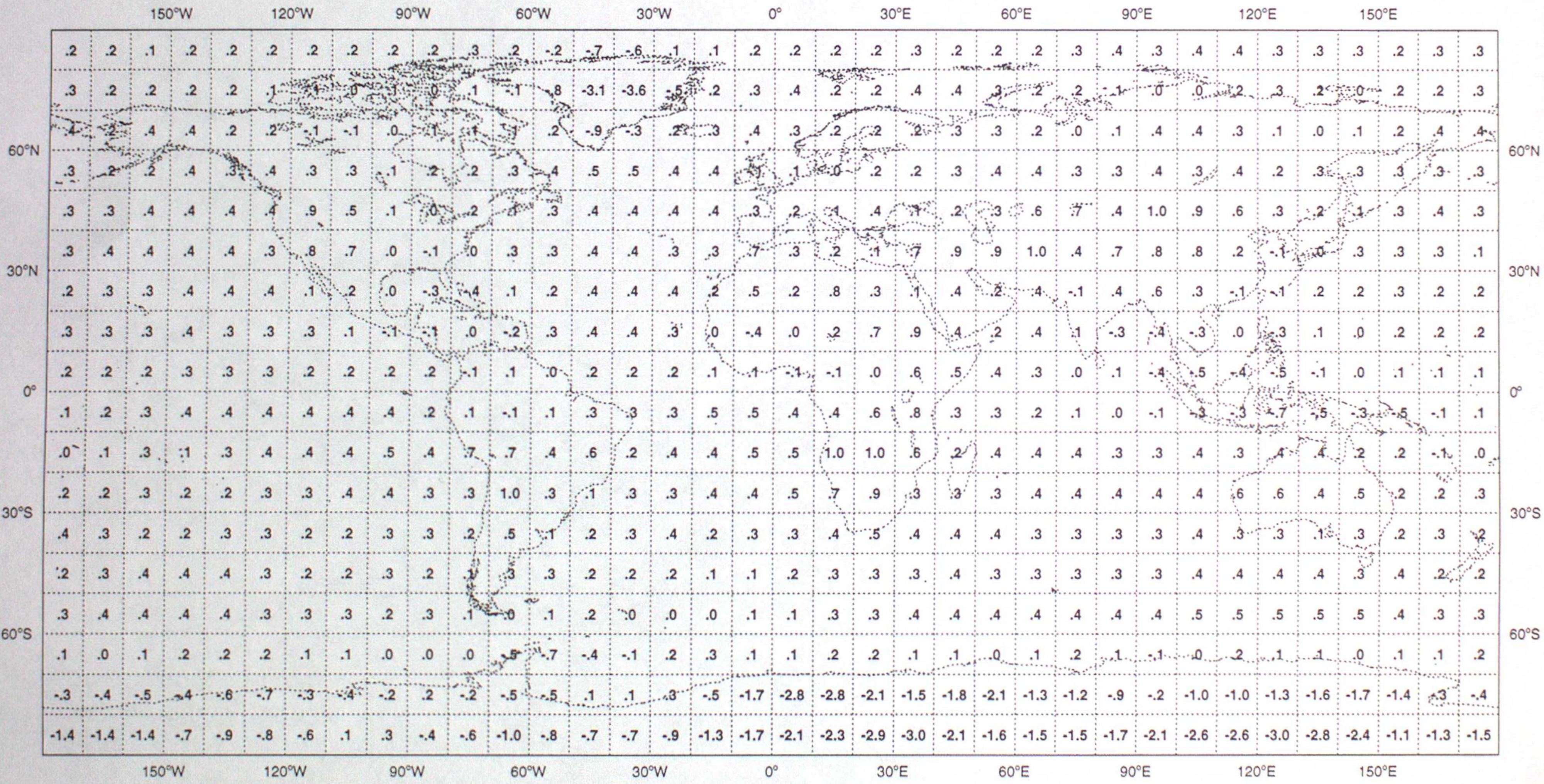
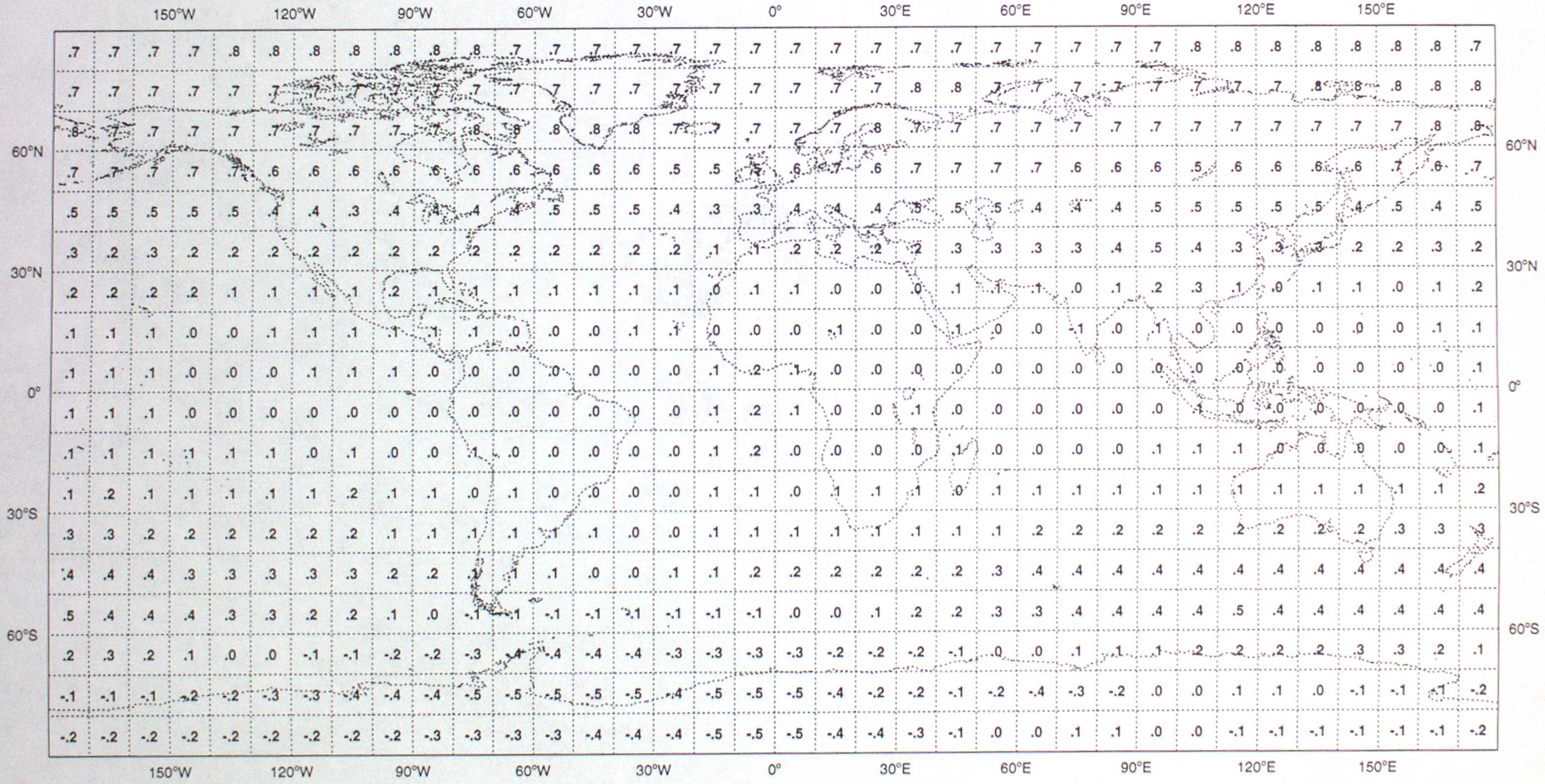

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-.9 -.9 -1.0 -.9 -.9 -.8 -.9 -.9 -.9 -.8 -.4 -.6 -.7 -.7 -.9 -.8 -.8 -.6 -.5 -.4 -.4 -.4 -.6 -.8 -.7 -.6 -.6 -.6 -.7 -.8 -.7 -.9 -1.0 -.9 -.7 -.8
-.8 -1.0 -1.1 -.9 -.8 -.9 -1.1 -.9 -.5 -.4 -.5 -.5 -.1 -.3 -.4 -.3 -.4 -.6 -1.0 -.9 -1.0 -.5 -.2 -.3 -.4 -.7 -1.4 -1.6 -1.5 -1.2 -.8 -.7 -1.1 -.7 -.7 -.8
-1.3 -1.2 -1.5 -2.2 -2.7 -2.5 -1.4 -1.2 -1.4 -1.6 -1.7 -1.3 -1.8 -1.8 -1.4 -1.3 -1.5 -1.6 -1.9 -2.5 -2.3 -1.5 -1.0 -1.8 -2.7 -2.9 -3.8 -3.9 -2.7 -2.2 -2.0 -3.0 -2.8 -2.2 -2.7 -1.9
-2.2 -1.9 -1.5 -1.8 -2.6 -3.9 -4.6 -3.5 -3.3 -2.6 -2.5 -3.0 -2.9 -2.4 -2.5 -2.8 -2.8 -2.8 -2.9 -3.0 -3.7 -3.9 -3.1 -2.8 -3.1 -3.5 -3.9 -4.4 -3.8 -3.5 -3.3 -3.8 -2.7 -2.9 -2.5 -2.2
-4.9 -4.3 -3.9 -3.1 -3.0 -2.2 -3.1 -5.0 -5.2 -3.7 -3.1 -2.8 -2.2 -2.9 -3.7 -3.2 -1.6 -1.1 -2.3 -3.0 -2.9 -2.3 -3.2 -1.9 -.6 -1.4 -4.0 -3.0 -3.9 -4.3 -3.5 -3.1 -3.3 -3.0 -3.7 -3.5
-3.9 -3.0 -1.3 -1.7 -1.5 -.3 .1 -2.2 -3.7 -4.7 -4.4 -2.3 -3.3 -3.1 -2.0 -.8 .1 .7 .1 .4 .8 1.2 1.1 .6 .8 -1.3 -2.0 -3.5 -4.3 -5.3 -4.7 -4.8 -4.4 -5.4 -5.0 -7.8
-3.5 -2.0 -1.5 -1.8 -1.8 -.5 -1.0 -3.5 -3.0 -3.5 -2.8 -1.8 -1.5 -.4 -.2 .0 -.1 -.2 -.3 1.9 1.0 .5 .1 -.1 -.8 -2.6 -4.1 -3.4 -3.0 -3.4 -3.2 -2.0 -1.3 -2.2 -2.2 -4.3
-3.7 -3.3 -3.2 -2.4 -3.1 -3.4 -3.6 -4.5 -6.8 -4.9 -2.8 -3.3 -1.5 -.6 -.6 -1.0 -4.0 -4.9 -2.5 -1.8 -.9 -1.5 -.6 -.5 -1.6 -5.5 -10.4 -10.1 -5.9 -4.5 -6.0 -5.1 -4.7 -3.5 -3.7 -2.5
-5.4 -4.8 -4.4 -4.3 -3.7 -3.5 -4.0 -5.3 -5.4 -5.3 -8.5 -7.4 -5.5 -4.2 -4.5 -4.7 -7.0 -5.2 -7.0 -7.9 -7.9 -5.0 -1.5 -2.9 -5.5 -7.7 -8.7 -11.4 -9.0 -8.8 -7.0 -6.0 -5.5 -5.9 -5.1 -4.9
-4.7 -3.7 -2.0 -1.4 -.7 -.6 -.4 -.3 -.4 -1.3 -4.3 -6.3 -5.0 -2.5 -1.7 -1.2 -.1 .0 -.4 -2.2 -3.0 -1.0 -1.5 -2.6 -2.8 -5.9 -8.1 -7.7 -5.2 -4.4 -6.4 -6.3 -7.1 -9.2 -6.3 -4.3
-4.9 -4.4 -2.3 -1.2 -1.3 -1.1 -.6 -.6 -1.0 -1.3 -1.2 -2.1 -.9 -.4 -1.2 -.5 -.3 -.2 -.2 1.1 .6 -.1 -.4 -.8 -1.3 -1.7 -2.9 -2.0 -1.5 -1.7 -1.0 -.5 -1.5 -4.2 -5.6 -4.6
-3.4 -6.5 -7.5 -6.0 -3.8 -3.9 -3.2 -2.0 -1.7 -1.4 -.9 .0 -2.3 -4.1 -2.2 -1.2 -.9 -.8 -.5 .7 .4 -.3 -.1 -.6 -1.2 -1.5 -1.7 -2.3 -1.7 .6 -1.8 -1.4 -1.2 -1.3 -2.7 -3.5
-2.3 -3.9 -6.5 -6.7 -5.6 -5.2 -7.1 -7.2 -5.7 -3.6 -2.9 -3.4 -5.5 -6.3 -4.6 -4.4 -4.0 -3.8 -3.0 -2.1 -1.6 -2.2 -1.7 -1.7 -2.3 -3.3 -3.6 -3.7 -3.0 -1.7 -2.4 -2.9 -3.1 -3.0 -2.8 -2.6
-4.1 -3.5 -2.7 -3.4 -4.0 -4.6 -4.8 -4.9 -5.3 -5.1 -5.3 -4.8 -4.6 -5.2 -5.4 -5.5 -5.7 -4.8 -5.3 -5.0 -5.1 -4.8 -3.8 -3.7 -3.5 -4.2 -4.6 -4.0 -3.7 -3.3 -3.0 -3.3 -3.7 -4.0 -4.2 -4.1
-3.9 -4.1 -3.9 -3.4 -3.1 -3.5 -4.2 -4.3 -4.1 -3.9 -3.9 -3.8 -3.7 -3.8 -3.9 -3.9 -4.9 -4.6 -5.1 -4.3 -3.9 -4.4 -3.9 -3.7 -4.1 -3.6 -3.7 -3.7 -3.7 -3.9 -3.5 -3.1 -3.1 -2.9 -3.5 -3.7
-3.7 -3.3 -3.6 -4.2 -4.4 -4.3 -3.8 -4.0 -3.9 -3.9 -3.7 -3.8 -4.1 -2.8 -2.2 -2.2 -2.7 -4.4 -5.6 -5.1 -5.1 -4.8 -3.0 -1.4 -1.5 -1.9 -2.1 -2.9 -3.0 -3.5 -3.5 -2.8 -2.6 -2.4 -3.1 -3.5
-2.2 -2.6 -2.9 -4.1 -4.7 -4.7 -4.6 -5.1 -3.8 -2.9 -2.9 -2.4 -2.8 -1.9 -1.4 -1.4 -3.0 -2.8 -2.7 -2.1 -1.2 -.2 .4 .7 .7 .6 .7 .9 .7 .7 .7 .7 .5 .2 -1.3 -2.1
-1.7 -2.2 -2.7 -2.5 -2.7 -3.0 -2.5 -1.3 -.6 -1.0 -1.2 -1.2 -1.0 -.7 -.2 .1 .0 .0 -.1 .1 .3 .5 1.0 1.1 1.3 1.5 1.4 1.3 1.2 1.1 .9 .7 .3 .1 -1.2 -1.7
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



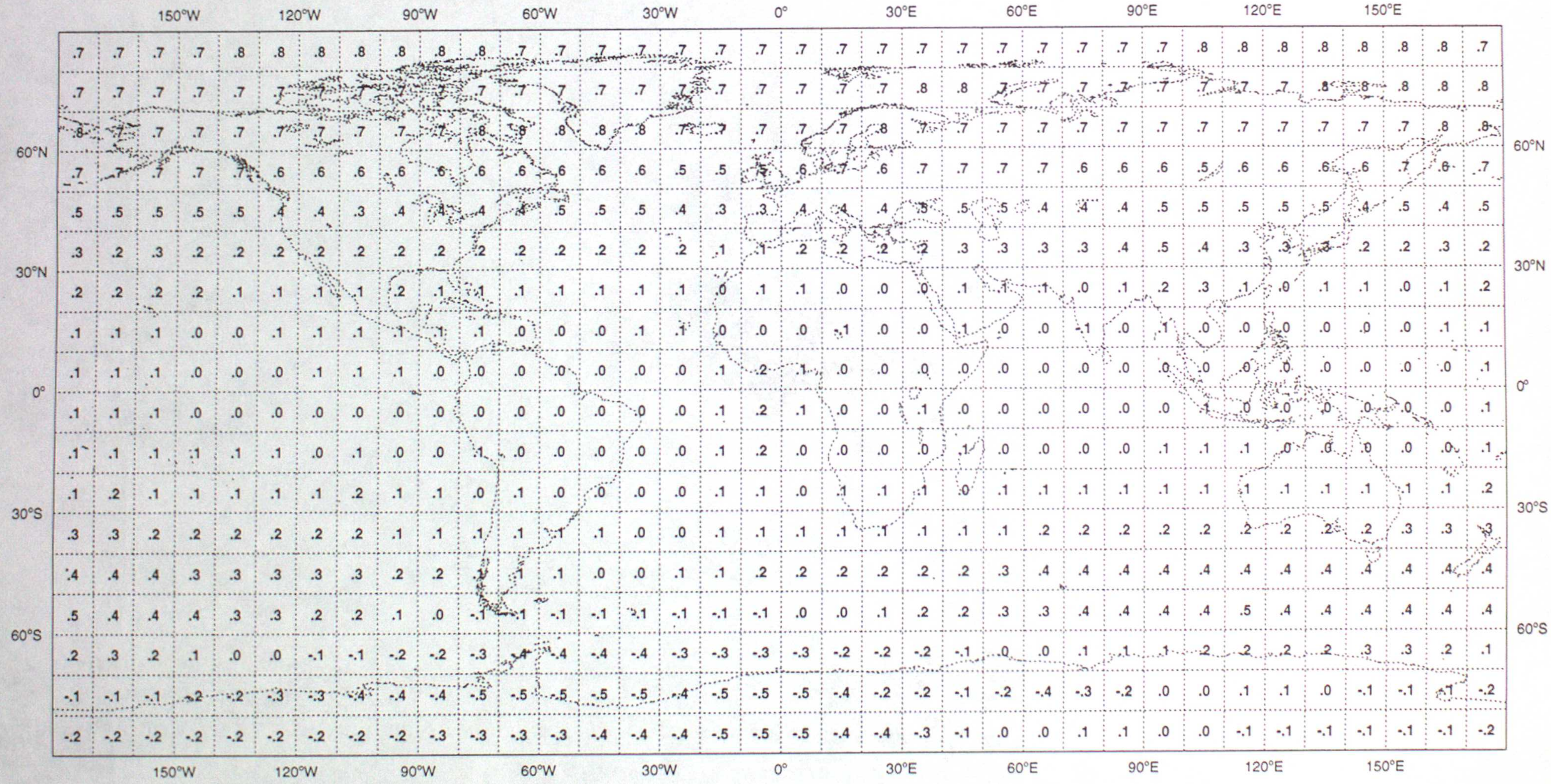
.2	.2	.1	.2	.2	.2	.2	.2	.2	.2	.3	.2	-.2	-.7	-.6	.1	.1	.2	.2	.2	.2	.3	.2	.2	.2	.3	.4	.3	.4	.4	.3	.3	.3	.2	.3	.3
.3	.2	.2	.2	.2	.1	.1	.0	.1	.0	.1	-.1	.8	-3.1	-3.6	-.5	.2	.3	.4	.2	.2	.4	.4	.3	.2	.2	-.1	.0	.0	.2	.3	.2	.0	.2	.2	.3
.4	.2	.4	.4	.2	.2	-.1	-.1	.0	.1	.1	-.1	.2	-.9	-.3	.2	.3	.4	.3	.2	.2	.2	.3	.3	.2	.0	.1	.4	.4	.3	.1	.0	.1	.2	.4	.4
.3	.2	.2	.4	.3	.4	.3	.3	.1	.2	.2	.3	.4	.5	.5	.4	.4	.1	.1	.0	.2	.2	.3	.4	.4	.3	.3	.4	.3	.4	.2	.3	.3	.3	.3	.3
.3	.3	.4	.4	.4	.4	.9	.5	.1	.0	.2	.1	.3	.4	.4	.4	.4	.3	.2	.1	.4	.1	.2	.3	.6	.7	.4	1.0	.9	.6	.3	.2	.1	.3	.4	.3
.3	.4	.4	.4	.4	.3	.8	.7	.0	-.1	.0	.3	.3	.4	.4	.3	.3	.7	.3	.2	.1	.7	.9	.9	1.0	.4	.7	.8	.8	.2	-.1	.0	.3	.3	.3	.1
.2	.3	.3	.4	.4	.4	.1	.2	.0	-.3	-.4	.1	.2	.4	.4	.4	.2	.5	.2	.8	.3	.1	.4	.2	.4	-.1	.4	.6	.3	-.1	-.1	.2	.2	.3	.2	.2
.3	.3	.3	.4	.3	.3	.3	.1	-.1	-.1	.0	-.2	.3	.4	.4	.3	.0	-.4	.0	.2	.7	.9	.4	.2	.4	.1	-.3	-.4	-.3	.0	-.3	.1	.0	.2	.2	.2
.2	.2	.2	.3	.3	.3	.2	.2	.2	.2	-.1	.1	.0	.2	.2	.2	.1	.1	-.1	-.1	.0	.6	.5	.4	.3	.0	.1	-.4	-.5	-.4	-.5	-.1	.0	.1	.1	.1
.1	.2	.3	.4	.4	.4	.4	.4	.4	.2	.1	-.1	.1	.3	.3	.3	.5	.5	.4	.4	.6	.8	.3	.3	.2	.1	.0	-.1	-.3	-.3	-.7	-.5	-.3	-.5	-.1	.1
.0	.1	.3	.1	.3	.4	.4	.4	.5	.4	.7	.7	.4	.6	.2	.4	.4	.5	.5	1.0	1.0	.6	.2	.4	.4	.4	.3	.3	.4	.3	.4	.4	.2	.2	-.1	.0
.2	.2	.3	.2	.2	.3	.3	.4	.4	.3	.3	1.0	.3	.1	.3	.3	.4	.4	.5	.7	.9	.3	.3	.3	.4	.4	.4	.4	.4	.6	.6	.4	.5	.2	.2	.3
.4	.3	.2	.2	.3	.3	.2	.2	.3	.3	.2	.5	.1	.2	.3	.4	.2	.3	.3	.4	.5	.4	.4	.4	.3	.3	.3	.3	.4	.3	.3	.1	.3	.2	.3	.2
.2	.3	.4	.4	.4	.3	.2	.2	.3	.2	.1	.3	.3	.2	.2	.2	.1	.1	.2	.3	.3	.3	.4	.3	.3	.3	.3	.3	.4	.4	.4	.4	.3	.4	.2	.2
.3	.4	.4	.4	.4	.3	.3	.3	.2	.3	.1	.0	.1	.2	.0	.0	.0	.1	.1	.3	.3	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.4	.3	.3
.1	.0	.1	.2	.2	.2	.1	.1	.0	.0	.0	-.5	-.7	-.4	-.1	.2	.3	.1	.1	.2	.2	.1	.1	.0	.1	.2	.1	-.1	.0	.2	.1	.1	.0	.1	.1	.2
-.3	-.4	-.5	-.4	-.6	-.7	-.3	-.4	-.2	.2	-.2	-.5	-.5	.1	.1	.3	-.5	-1.7	-2.8	-2.8	-2.1	-1.5	-1.8	-2.1	-1.3	-1.2	-.9	-.2	-1.0	-1.0	-1.3	-1.6	-1.7	-1.4	-.3	-.4
-1.4	-1.4	-1.4	-.7	-.9	-.8	-.6	.1	.3	-.4	-.6	-1.0	-.8	-.7	-.7	-.9	-1.3	-1.7	-2.1	-2.3	-2.9	-3.0	-2.1	-1.6	-1.5	-1.5	-1.7	-2.1	-2.6	-2.6	-3.0	-2.8	-2.4	-1.1	-1.3	-1.5

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



.7	.7	.7	.7	.8	.8	.8	.8	.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8	.8	.8	.7
.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8
.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8	.7	.7	.7	.7	.7	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8
.7	.7	.7	.7	.7	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.6	.7	.6	.7	.7	.7	.7	.6	.6	.6	.5	.6	.6	.6	.6	.7	.6	.7
.5	.5	.5	.5	.5	.4	.4	.3	.4	.4	.4	.4	.5	.5	.5	.4	.3	.3	.4	.4	.4	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.4	.5	.4	.5
.3	.2	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.2	.2	.2	.2	.3	.3	.3	.3	.4	.5	.4	.3	.3	.3	.2	.2	.3	.2
.2	.2	.2	.2	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.0	.1	.1	.0	.0	.0	.1	.1	.1	.1	.0	.1	.2	.3	.1	.0	.1	.1	.0	.1	.2
.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.1	.1	.0	.0	.0	.1	.0	.0	.1	.0	.0	-.1	.0	.1	.0	.0	.0	.0	.0	.0	.1	.1
.1	.1	.1	.0	.0	.0	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.1	.2	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.1	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1
.1	.1	.1	.1	.1	.1	.0	.1	.0	.0	.1	.0	.0	.0	.0	.0	.1	.2	.0	.0	.0	.0	.1	.0	.0	.0	.0	.1	.1	.1	.0	.0	.0	.0	.0	.1
.1	.2	.1	.1	.1	.1	.1	.2	.1	.1	.0	.1	.0	.0	.0	.0	.1	.1	.0	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2
.3	.3	.2	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.3	.3
.4	.4	.4	.3	.3	.3	.3	.3	.2	.2	.1	.1	.1	.0	.0	.1	.1	.2	.2	.2	.2	.2	.2	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.4	.4	.4	.3	.3	.2	.2	.1	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	.0	.0	.1	.2	.2	.3	.3	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4
.2	.3	.2	.1	.0	.0	-.1	-.1	-.2	-.2	-.3	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.1	.0	.0	.1	.1	.1	.2	.2	.2	.2	.3	.3	.2	.1
-.1	-.1	-.1	-.2	-.2	-.3	-.3	-.4	-.4	-.4	-.5	-.5	-.5	-.5	-.5	-.4	-.5	-.5	-.5	-.4	-.2	-.2	-.1	-.2	-.4	-.3	-.2	.0	.0	.1	.1	.0	-.1	-.1	-.1	-.2
-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.5	-.5	-.5	-.4	-.4	-.3	-.1	.0	.0	.1	.1	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.2

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: HIRS4 (400 hPa)
NOAA16, using all observations

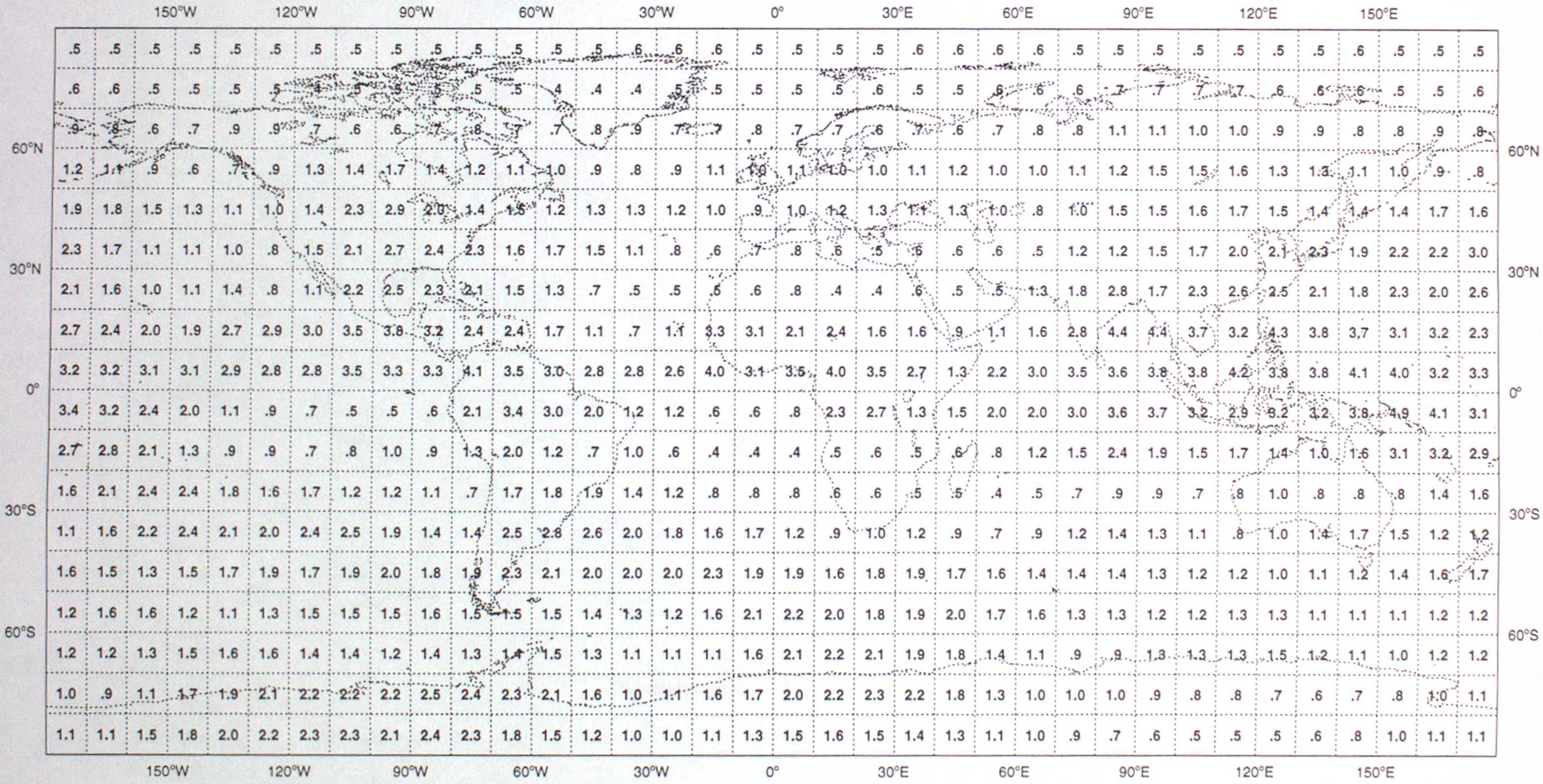


.7	.7	.7	.7	.8	.8	.8	.8	.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8	.8	.8	.7
.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8
.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.8	.7	.7	.7	.7	.7	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8
.7	.7	.7	.7	.7	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.5	.6	.7	.6	.7	.7	.7	.7	.6	.6	.6	.5	.6	.6	.6	.6	.7	.6	.7
.5	.5	.5	.5	.5	.4	.4	.3	.4	.4	.4	.4	.5	.5	.5	.4	.3	.3	.4	.4	.4	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.4	.5	.4	.5
.3	.2	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.2	.2	.2	.2	.3	.3	.3	.3	.4	.5	.4	.3	.3	.3	.2	.2	.3	.2
.2	.2	.2	.2	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.0	.1	.1	.0	.0	.0	.1	.1	.1	.0	.1	.2	.3	.1	.0	.1	.1	.0	.1	.2
.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.0	.0	.0	.1	.1	.0	.0	.0	-.1	.0	.0	.1	.0	.0	-.1	.0	.1	.0	.0	.0	.0	.0	.0	.1	.1
.1	.1	.1	.0	.0	.0	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.1	.2	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.1	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.1
.1	.1	.1	.1	.1	.1	.0	.1	.0	.0	.1	.0	.0	.0	.0	.0	.1	.2	.0	.0	.0	.0	.1	.0	.0	.0	.0	.1	.1	.1	.0	.0	.0	.0	.0	.1
.1	.2	.1	.1	.1	.1	.1	.2	.1	.1	.0	.1	.0	.0	.0	.0	.1	.1	.0	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2
.3	.3	.2	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.3
.4	.4	.4	.3	.3	.3	.3	.3	.2	.2	.1	.1	.1	.1	.0	.0	.1	.1	.2	.2	.2	.2	.2	.2	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.4	.4	.4	.3	.3	.2	.2	.1	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	.0	.0	.1	.2	.2	.3	.3	.3	.4	.4	.4	.4	.5	.4	.4	.4	.4
.2	.3	.2	.1	.0	.0	-.1	-.1	-.2	-.2	-.3	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.1	.0	.0	.0	.1	.1	.1	.2	.2	.2	.2	.3	.3	.2	.1
-.1	-.1	-.1	-.2	-.2	-.3	-.3	-.4	-.4	-.4	-.5	-.5	-.5	-.5	-.5	-.5	-.4	-.5	-.5	-.5	-.4	-.2	-.2	-.1	-.2	-.4	-.3	-.2	.0	.0	.1	.1	.0	-.1	-.1	-.1	-.2
-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.5	-.5	-.5	-.4	-.4	-.3	-.1	.0	.0	.1	.1	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.2

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001

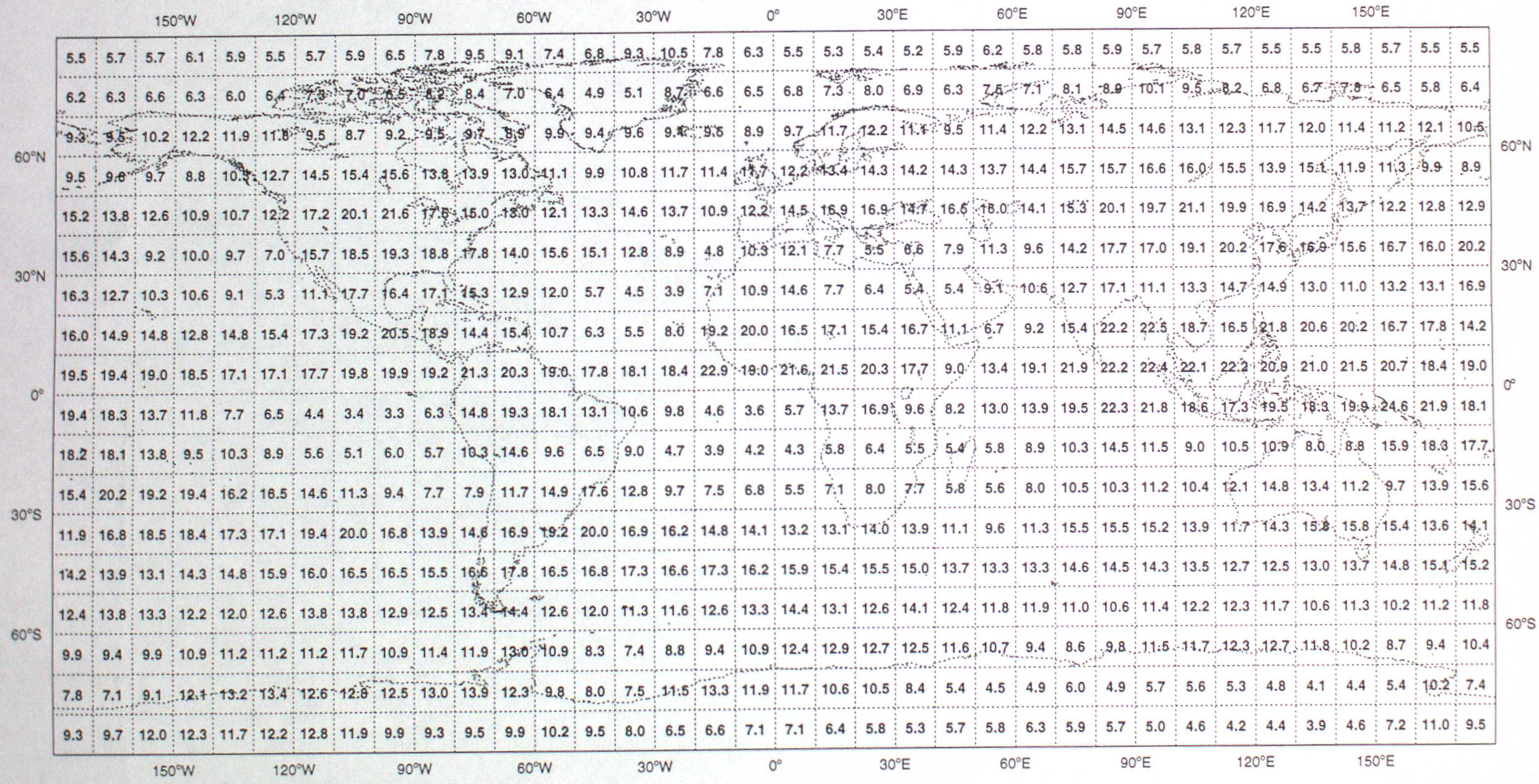
Channel: HIRS4 (400 hPa)

NOAA16, using all observations



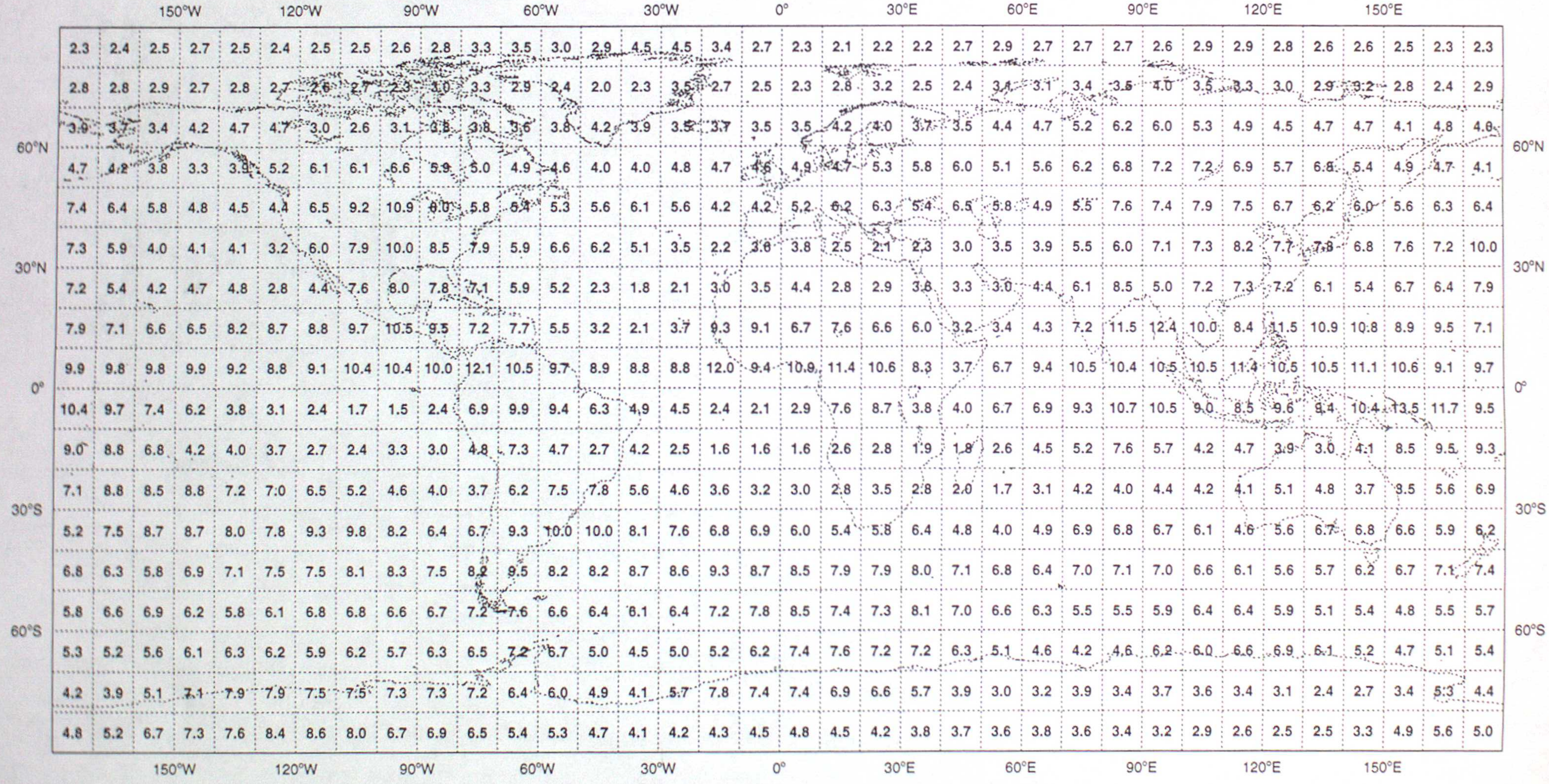
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.5	.5	.5	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5
.6	.6	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.6	.5	.5	.6	.6	.6	.7	.7	.7	.7	.6	.6	.6	.5	.5	.6
.9	.8	.6	.7	.9	.9	.7	.6	.6	.7	.8	.7	.7	.8	.9	.7	.7	.8	.7	.7	.6	.7	.6	.7	.8	.8	1.1	1.1	1.0	1.0	.9	.9	.8	.8	.9	.8
1.2	1.1	.9	.6	.7	.9	1.3	1.4	1.7	1.4	1.2	1.1	1.0	.9	.8	.9	1.1	1.0	1.1	1.0	1.0	1.1	1.2	1.0	1.0	1.1	1.2	1.5	1.5	1.6	1.3	1.3	1.1	1.0	.9	.8
1.9	1.8	1.5	1.3	1.1	1.0	1.4	2.3	2.9	2.0	1.4	1.5	1.2	1.3	1.3	1.2	1.0	.9	1.0	1.2	1.3	1.1	1.3	1.0	.8	1.0	1.5	1.5	1.6	1.7	1.5	1.4	1.4	1.4	1.7	1.6
2.3	1.7	1.1	1.1	1.0	.8	1.5	2.1	2.7	2.4	2.3	1.6	1.7	1.5	1.1	.8	.6	.7	.8	.6	.5	.6	.6	.6	.5	1.2	1.2	1.5	1.7	2.0	2.1	2.3	1.9	2.2	2.2	3.0
2.1	1.6	1.0	1.1	1.4	.8	1.1	2.2	2.5	2.3	2.1	1.5	1.3	.7	.5	.5	.5	.6	.8	.4	.4	.6	.5	.5	1.3	1.8	2.8	1.7	2.3	2.6	2.5	2.1	1.8	2.3	2.0	2.6
2.7	2.4	2.0	1.9	2.7	2.9	3.0	3.5	3.8	3.2	2.4	2.4	1.7	1.1	.7	1.1	3.3	3.1	2.1	2.4	1.6	1.6	.9	1.1	1.6	2.8	4.4	4.4	3.7	3.2	4.3	3.8	3.7	3.1	3.2	2.3
3.2	3.2	3.1	3.1	2.9	2.8	2.8	3.5	3.3	3.3	4.1	3.5	3.0	2.8	2.8	2.6	4.0	3.1	3.5	4.0	3.5	2.7	1.3	2.2	3.0	3.5	3.6	3.8	3.8	4.2	3.8	3.8	4.1	4.0	3.2	3.3
3.4	3.2	2.4	2.0	1.1	.9	.7	.5	.5	.6	2.1	3.4	3.0	2.0	1.2	1.2	.6	.6	.8	2.3	2.7	1.3	1.5	2.0	2.0	3.0	3.6	3.7	3.2	2.9	3.2	3.2	3.8	4.9	4.1	3.1
2.7	2.8	2.1	1.3	.9	.9	.7	.8	1.0	.9	1.3	2.0	1.2	.7	1.0	.6	.4	.4	.4	.5	.6	.5	.6	.8	1.2	1.5	2.4	1.9	1.5	1.7	1.4	1.0	1.6	3.1	3.2	2.9
1.6	2.1	2.4	2.4	1.8	1.6	1.7	1.2	1.2	1.1	.7	1.7	1.8	1.9	1.4	1.2	.8	.8	.8	.6	.6	.5	.5	.4	.5	.7	.9	.9	.7	.8	1.0	.8	.8	.8	1.4	1.6
1.1	1.6	2.2	2.4	2.1	2.0	2.4	2.5	1.9	1.4	1.4	2.5	2.8	2.6	2.0	1.8	1.6	1.7	1.2	.9	1.0	1.2	.9	.7	.9	1.2	1.4	1.3	1.1	.8	1.0	1.4	1.7	1.5	1.2	1.2
1.6	1.5	1.3	1.5	1.7	1.9	1.7	1.9	2.0	1.8	1.9	2.3	2.1	2.0	2.0	2.0	2.3	1.9	1.9	1.6	1.8	1.9	1.7	1.6	1.4	1.4	1.4	1.3	1.2	1.2	1.0	1.1	1.2	1.4	1.6	1.7
1.2	1.6	1.6	1.2	1.1	1.3	1.5	1.5	1.5	1.6	1.5	1.5	1.5	1.4	1.3	1.2	1.6	2.1	2.2	2.0	1.8	1.9	2.0	1.7	1.6	1.3	1.3	1.2	1.2	1.3	1.3	1.1	1.1	1.1	1.2	1.2
1.2	1.2	1.3	1.5	1.6	1.6	1.4	1.4	1.2	1.4	1.3	1.4	1.5	1.3	1.1	1.1	1.1	1.6	2.1	2.2	2.1	1.9	1.8	1.4	1.1	.9	.9	1.3	1.3	1.3	1.5	1.2	1.1	1.0	1.2	1.2
1.0	.9	1.1	1.7	1.9	2.1	2.2	2.2	2.2	2.5	2.4	2.3	2.1	1.6	1.0	1.1	1.6	1.7	2.0	2.2	2.3	2.2	1.8	1.3	1.0	1.0	1.0	.9	.8	.8	.7	.6	.7	.8	1.0	1.1
1.1	1.1	1.5	1.8	2.0	2.2	2.3	2.3	2.1	2.4	2.3	1.8	1.5	1.2	1.0	1.0	1.1	1.3	1.5	1.6	1.5	1.4	1.3	1.1	1.0	.9	.7	.6	.5	.5	.5	.6	.8	1.0	1.1	1.1

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



5.5	5.7	5.7	6.1	5.9	5.5	5.7	5.9	6.5	7.8	9.5	9.1	7.4	6.8	9.3	10.5	7.8	6.3	5.5	5.3	5.4	5.2	5.9	6.2	5.8	5.8	5.9	5.7	5.8	5.7	5.5	5.5	5.8	5.7	5.5	5.5
6.2	6.3	6.6	6.3	6.0	6.4	7.3	7.0	6.5	8.2	8.4	7.0	6.4	4.9	5.1	8.7	6.6	6.5	6.8	7.3	8.0	6.9	6.3	7.6	7.1	8.1	8.9	10.1	9.5	8.2	6.8	6.7	7.8	6.5	5.8	6.4
9.3	9.5	10.2	12.2	11.9	11.8	9.5	8.7	9.2	9.5	9.7	8.9	9.9	9.4	9.6	9.4	9.6	8.9	9.7	11.7	12.2	11.1	9.5	11.4	12.2	13.1	14.5	14.6	13.1	12.3	11.7	12.0	11.4	11.2	12.1	10.5
9.5	9.6	9.7	8.8	10.5	12.7	14.5	15.4	15.6	13.8	13.9	13.0	11.1	9.9	10.8	11.7	11.4	11.7	12.2	13.4	14.3	14.2	14.3	13.7	14.4	15.7	15.7	16.6	16.0	15.5	13.9	15.1	11.9	11.3	9.9	8.9
15.2	13.8	12.6	10.9	10.7	12.2	17.2	20.1	21.6	17.6	15.0	18.0	12.1	13.3	14.6	13.7	10.9	12.2	14.5	16.9	16.9	14.7	16.5	18.0	14.1	15.3	20.1	19.7	21.1	19.9	16.9	14.2	13.7	12.2	12.8	12.9
15.6	14.3	9.2	10.0	9.7	7.0	15.7	18.5	19.3	18.8	17.8	14.0	15.6	15.1	12.8	8.9	4.8	10.3	12.1	7.7	5.5	6.6	7.9	11.3	9.6	14.2	17.7	17.0	19.1	20.2	17.6	16.9	15.6	16.7	16.0	20.2
16.3	12.7	10.3	10.6	9.1	5.3	11.1	17.7	16.4	17.1	15.3	12.9	12.0	5.7	4.5	3.9	7.1	10.9	14.6	7.7	6.4	5.4	5.4	9.1	10.6	12.7	17.1	11.1	13.3	14.7	14.9	13.0	11.0	13.2	13.1	16.9
16.0	14.9	14.8	12.8	14.8	15.4	17.3	19.2	20.5	18.9	14.4	15.4	10.7	6.3	5.5	8.0	19.2	20.0	16.5	17.1	15.4	16.7	11.1	6.7	9.2	15.4	22.2	22.5	18.7	16.5	21.8	20.6	20.2	16.7	17.8	14.2
19.5	19.4	19.0	18.5	17.1	17.1	17.7	19.8	19.9	19.2	21.3	20.3	19.0	17.8	18.1	18.4	22.9	19.0	21.6	21.5	20.3	17.7	9.0	13.4	19.1	21.9	22.2	22.4	22.1	22.2	20.9	21.0	21.5	20.7	18.4	19.0
19.4	18.3	13.7	11.8	7.7	6.5	4.4	3.4	3.3	6.3	14.8	19.3	18.1	13.1	10.6	9.8	4.6	3.6	5.7	13.7	16.9	9.6	8.2	13.0	13.9	19.5	22.3	21.8	18.6	17.3	19.5	18.3	19.9	24.6	21.9	18.1
18.2	18.1	13.8	9.5	10.3	8.9	5.6	5.1	6.0	5.7	10.3	14.6	9.6	6.5	9.0	4.7	3.9	4.2	4.3	5.8	6.4	5.5	5.4	5.8	8.9	10.3	14.5	11.5	9.0	10.5	10.9	8.0	8.8	15.9	18.3	17.7
15.4	20.2	19.2	19.4	16.2	16.5	14.6	11.3	9.4	7.7	7.9	11.7	14.9	17.6	12.8	9.7	7.5	6.8	5.5	7.1	8.0	7.7	5.8	5.6	8.0	10.5	10.3	11.2	10.4	12.1	14.8	13.4	11.2	9.7	13.9	15.6
11.9	16.8	18.5	18.4	17.3	17.1	19.4	20.0	16.8	13.9	14.6	16.9	19.2	20.0	16.9	16.2	14.8	14.1	13.2	13.1	14.0	13.9	11.1	9.6	11.3	15.5	15.5	15.2	13.9	11.7	14.3	15.8	15.8	15.4	13.6	14.1
14.2	13.9	13.1	14.3	14.8	15.9	16.0	16.5	16.5	15.5	16.6	17.8	16.5	16.8	17.3	16.6	17.3	16.2	15.9	15.4	15.5	15.0	13.7	13.3	13.3	14.6	14.5	14.3	13.5	12.7	12.5	13.0	13.7	14.8	15.1	15.2
12.4	13.8	13.3	12.2	12.0	12.6	13.8	13.8	12.9	12.5	13.4	14.4	12.6	12.0	11.3	11.6	12.6	13.3	14.4	13.1	12.6	14.1	12.4	11.8	11.9	11.0	10.6	11.4	12.2	12.3	11.7	10.6	11.3	10.2	11.2	11.8
9.9	9.4	9.9	10.9	11.2	11.2	11.2	11.7	10.9	11.4	11.9	13.0	10.9	8.3	7.4	8.8	9.4	10.9	12.4	12.9	12.7	12.5	11.6	10.7	9.4	8.6	9.8	11.5	11.7	12.3	12.7	11.8	10.2	8.7	9.4	10.4
7.8	7.1	9.1	12.1	13.2	13.4	12.6	12.8	12.5	13.0	13.9	12.3	9.8	8.0	7.5	11.5	13.3	11.9	11.7	10.6	10.5	8.4	5.4	4.5	4.9	6.0	4.9	5.7	5.6	5.3	4.8	4.1	4.4	5.4	10.2	7.4
9.3	9.7	12.0	12.3	11.7	12.2	12.8	11.9	9.9	9.3	9.5	9.9	10.2	9.5	8.0	6.5	6.6	7.1	7.1	6.4	5.8	5.3	5.7	5.8	6.3	5.9	5.7	5.0	4.6	4.2	4.4	3.9	4.6	7.2	11.0	9.5

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations

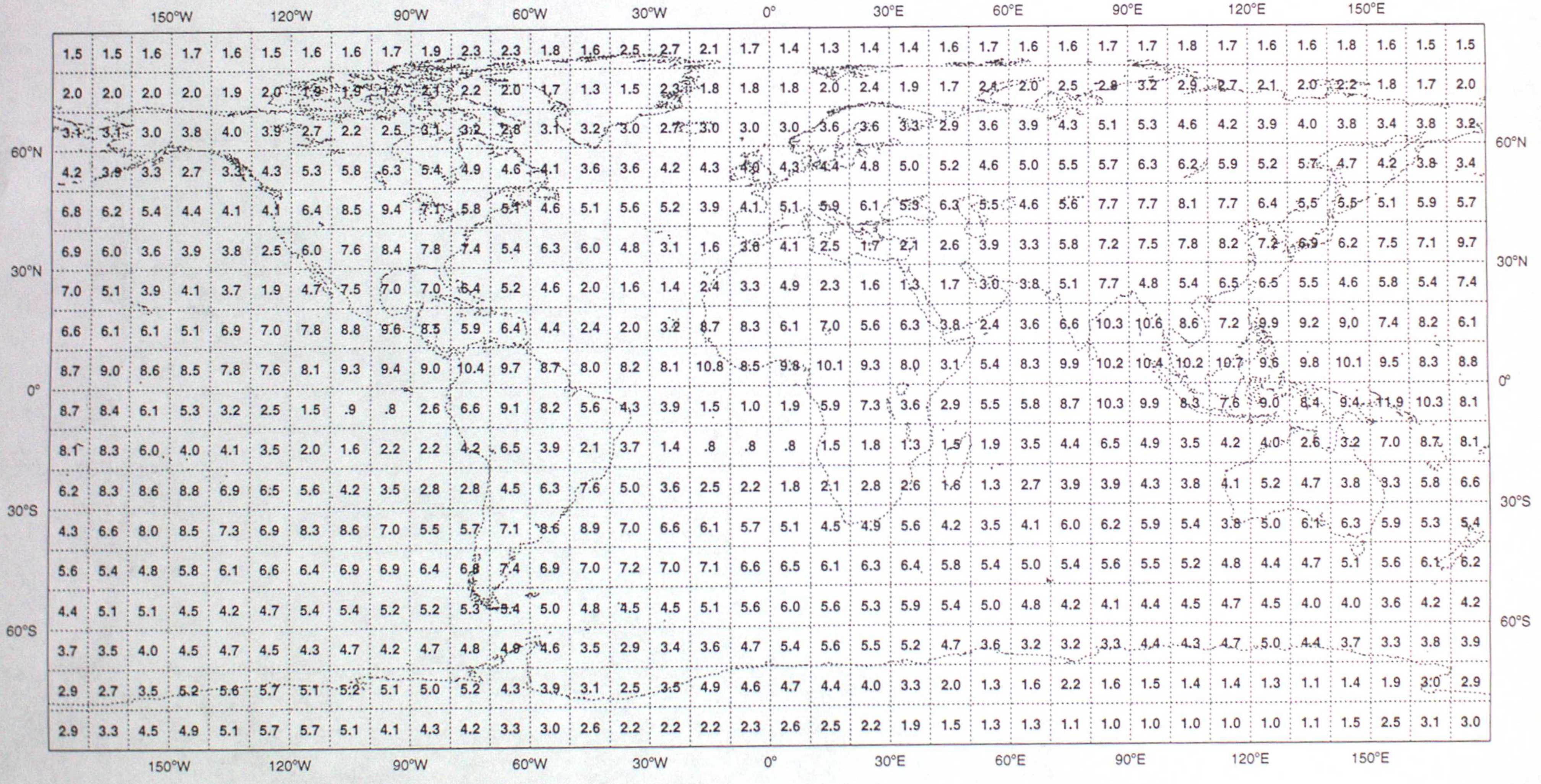


2.3	2.4	2.5	2.7	2.5	2.4	2.5	2.5	2.6	2.8	3.3	3.5	3.0	2.9	4.5	4.5	3.4	2.7	2.3	2.1	2.2	2.2	2.7	2.9	2.7	2.7	2.7	2.6	2.9	2.9	2.8	2.6	2.6	2.5	2.3	2.3
2.8	2.8	2.9	2.7	2.8	2.7	2.6	2.7	2.3	3.0	3.3	2.9	2.4	2.0	2.3	3.5	2.7	2.5	2.3	2.8	3.2	2.5	2.4	3.4	3.1	3.4	3.5	4.0	3.5	3.3	3.0	2.9	3.2	2.8	2.4	2.9
3.9	3.7	3.4	4.2	4.7	4.7	3.0	2.6	3.1	3.8	3.8	3.6	3.8	4.2	3.9	3.5	3.7	3.5	3.5	4.2	4.0	3.7	3.5	4.4	4.7	5.2	6.2	6.0	5.3	4.9	4.5	4.7	4.7	4.1	4.8	4.8
4.7	4.2	3.8	3.3	3.9	5.2	6.1	6.1	6.6	5.9	5.0	4.9	4.6	4.0	4.0	4.8	4.7	4.6	4.9	4.7	5.3	5.8	6.0	5.1	5.6	6.2	6.8	7.2	7.2	6.9	5.7	6.8	5.4	4.9	4.7	4.1
7.4	6.4	5.8	4.8	4.5	4.4	6.5	9.2	10.9	8.0	5.8	5.4	5.3	5.6	6.1	5.6	4.2	4.2	5.2	6.2	6.3	5.4	6.5	5.8	4.9	5.5	7.6	7.4	7.9	7.5	6.7	6.2	6.0	5.6	6.3	6.4
7.3	5.9	4.0	4.1	4.1	3.2	6.0	7.9	10.0	8.5	7.9	5.9	6.6	6.2	5.1	3.5	2.2	3.8	3.8	2.5	2.1	2.3	3.0	3.5	3.9	5.5	6.0	7.1	7.3	8.2	7.7	7.8	6.8	7.6	7.2	10.0
7.2	5.4	4.2	4.7	4.8	2.8	4.4	7.6	8.0	7.8	7.1	5.9	5.2	2.3	1.8	2.1	3.0	3.5	4.4	2.8	2.9	3.8	3.3	3.0	4.4	6.1	8.5	5.0	7.2	7.3	7.2	6.1	5.4	6.7	6.4	7.9
7.9	7.1	6.6	6.5	8.2	8.7	8.8	9.7	10.5	9.5	7.2	7.7	5.5	3.2	2.1	3.7	9.3	9.1	6.7	7.6	6.6	6.0	3.2	3.4	4.3	7.2	11.5	12.4	10.0	8.4	11.5	10.9	10.8	8.9	9.5	7.1
9.9	9.8	9.8	9.9	9.2	8.8	9.1	10.4	10.4	10.0	12.1	10.5	9.7	8.9	8.8	8.8	12.0	9.4	10.9	11.4	10.6	8.3	3.7	6.7	9.4	10.5	10.4	10.5	10.5	11.4	10.5	10.5	11.1	10.6	9.1	9.7
10.4	9.7	7.4	6.2	3.8	3.1	2.4	1.7	1.5	2.4	6.9	9.9	9.4	6.3	4.9	4.5	2.4	2.1	2.9	7.6	8.7	3.8	4.0	6.7	6.9	9.3	10.7	10.5	9.0	8.5	9.6	9.4	10.4	13.5	11.7	9.5
9.0	8.8	6.8	4.2	4.0	3.7	2.7	2.4	3.3	3.0	4.8	7.3	4.7	2.7	4.2	2.5	1.6	1.6	1.6	2.6	2.8	1.9	1.8	2.6	4.5	5.2	7.6	5.7	4.2	4.7	3.9	3.0	4.1	8.5	9.5	9.3
7.1	8.8	8.5	8.8	7.2	7.0	6.5	5.2	4.6	4.0	3.7	6.2	7.5	7.8	5.6	4.6	3.6	3.2	3.0	2.8	3.5	2.8	2.0	1.7	3.1	4.2	4.0	4.4	4.2	4.1	5.1	4.8	3.7	3.5	5.6	6.9
5.2	7.5	8.7	8.7	8.0	7.8	9.3	9.8	8.2	6.4	6.7	9.3	10.0	10.0	8.1	7.6	6.8	6.9	6.0	5.4	5.8	6.4	4.8	4.0	4.9	6.9	6.8	6.7	6.1	4.6	5.6	6.7	6.8	6.6	5.9	6.2
6.8	6.3	5.8	6.9	7.1	7.5	7.5	8.1	8.3	7.5	8.2	9.5	8.2	8.2	8.7	8.6	9.3	8.7	8.5	7.9	7.9	8.0	7.1	6.8	6.4	7.0	7.1	7.0	6.6	6.1	5.6	5.7	6.2	6.7	7.1	7.4
5.8	6.6	6.9	6.2	5.8	6.1	6.8	6.8	6.6	6.7	7.2	7.6	6.6	6.4	6.1	6.4	7.2	7.8	8.5	7.4	7.3	8.1	7.0	6.6	6.3	5.5	5.5	5.9	6.4	6.4	5.9	5.1	5.4	4.8	5.5	5.7
5.3	5.2	5.6	6.1	6.3	6.2	5.9	6.2	5.7	6.3	6.5	7.2	6.7	5.0	4.5	5.0	5.2	6.2	7.4	7.6	7.2	7.2	6.3	5.1	4.6	4.2	4.6	6.2	6.0	6.6	6.9	6.1	5.2	4.7	5.1	5.4
4.2	3.9	5.1	7.1	7.9	7.9	7.5	7.5	7.3	7.3	7.2	6.4	6.0	4.9	4.1	5.7	7.8	7.4	7.4	6.9	6.6	5.7	3.9	3.0	3.2	3.9	3.4	3.7	3.6	3.4	3.1	2.4	2.7	3.4	5.3	4.4
4.8	5.2	6.7	7.3	7.6	8.4	8.6	8.0	6.7	6.9	6.5	5.4	5.3	4.7	4.1	4.2	4.3	4.5	4.8	4.5	4.2	3.8	3.7	3.6	3.8	3.6	3.4	3.2	2.9	2.6	2.5	2.5	3.3	4.9	5.6	5.0

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001

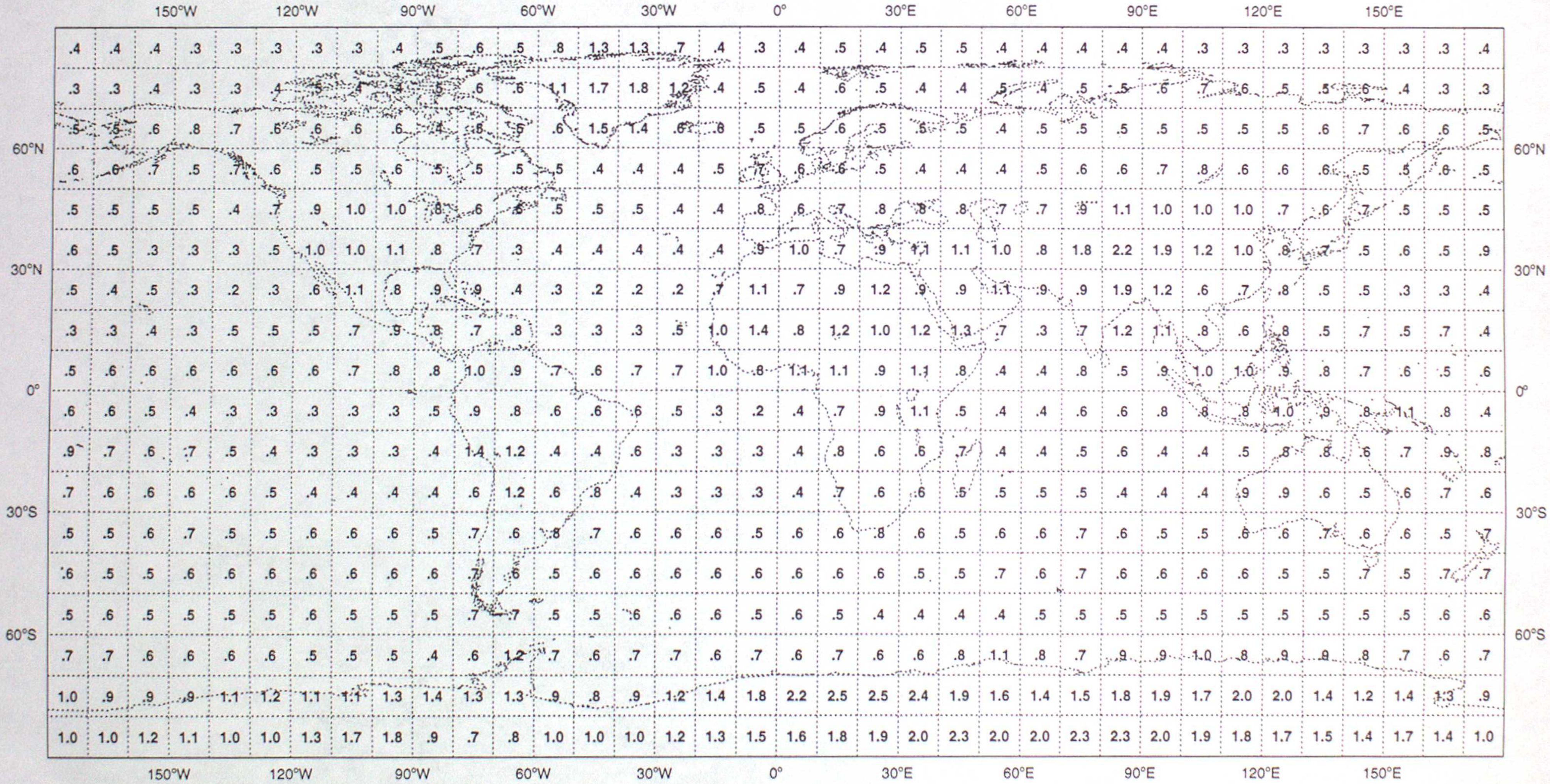
Channel: AMSUA-7 (300 hPa)

NOAA16, using all observations



1.5	1.5	1.6	1.7	1.6	1.5	1.6	1.6	1.7	1.9	2.3	2.3	1.8	1.6	2.5	2.7	2.1	1.7	1.4	1.3	1.4	1.4	1.6	1.7	1.6	1.6	1.7	1.7	1.8	1.7	1.6	1.6	1.8	1.6	1.5	1.5
2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.7	2.1	2.2	2.0	1.7	1.3	1.5	2.3	1.8	1.8	1.8	2.0	2.4	1.9	1.7	2.4	2.0	2.5	2.8	3.2	2.9	2.7	2.1	2.0	2.2	1.8	1.7	2.0
3.1	3.1	3.0	3.8	4.0	3.9	2.7	2.2	2.5	3.1	3.2	2.8	3.1	3.2	3.0	2.7	3.0	3.0	3.0	3.6	3.6	3.3	2.9	3.6	3.9	4.3	5.1	5.3	4.6	4.2	3.9	4.0	3.8	3.4	3.8	3.2
4.2	3.9	3.3	2.7	3.3	4.3	5.3	5.8	6.3	5.4	4.9	4.6	4.1	3.6	3.6	4.2	4.3	4.0	4.3	4.4	4.8	5.0	5.2	4.6	5.0	5.5	5.7	6.3	6.2	5.9	5.2	5.7	4.7	4.2	3.8	3.4
6.8	6.2	5.4	4.4	4.1	4.1	6.4	8.5	9.4	7.1	5.8	5.1	4.6	5.1	5.6	5.2	3.9	4.1	5.1	5.9	6.1	5.3	6.3	5.5	4.6	5.6	7.7	7.7	8.1	7.7	6.4	5.5	5.5	5.1	5.9	5.7
6.9	6.0	3.6	3.9	3.8	2.5	6.0	7.6	8.4	7.8	7.4	5.4	6.3	6.0	4.8	3.1	1.6	3.6	4.1	2.5	1.7	2.1	2.6	3.9	3.3	5.8	7.2	7.5	7.8	8.2	7.2	6.9	6.2	7.5	7.1	9.7
7.0	5.1	3.9	4.1	3.7	1.9	4.7	7.5	7.0	7.0	6.4	5.2	4.6	2.0	1.6	1.4	2.4	3.3	4.9	2.3	1.6	1.3	1.7	3.0	3.8	5.1	7.7	4.8	5.4	6.5	6.5	5.5	4.6	5.8	5.4	7.4
6.6	6.1	6.1	5.1	6.9	7.0	7.8	8.8	9.6	8.5	5.9	6.4	4.4	2.4	2.0	3.2	8.7	8.3	6.1	7.0	5.6	6.3	3.8	2.4	3.6	6.6	10.3	10.6	8.6	7.2	9.9	9.2	9.0	7.4	8.2	6.1
8.7	9.0	8.6	8.5	7.8	7.6	8.1	9.3	9.4	9.0	10.4	9.7	8.7	8.0	8.2	8.1	10.8	8.5	9.8	10.1	9.3	8.0	3.1	5.4	8.3	9.9	10.2	10.4	10.2	10.7	9.6	9.8	10.1	9.5	8.3	8.8
8.7	8.4	6.1	5.3	3.2	2.5	1.5	.9	.8	2.6	6.6	9.1	8.2	5.6	4.3	3.9	1.5	1.0	1.9	5.9	7.3	3.6	2.9	5.5	5.8	8.7	10.3	9.9	8.3	7.6	9.0	8.4	9.4	11.9	10.3	8.1
8.1	8.3	6.0	4.0	4.1	3.5	2.0	1.6	2.2	2.2	4.2	6.5	3.9	2.1	3.7	1.4	.8	.8	.8	1.5	1.8	1.3	1.5	1.9	3.5	4.4	6.5	4.9	3.5	4.2	4.0	2.6	3.2	7.0	8.7	8.1
6.2	8.3	8.6	8.8	6.9	6.5	5.6	4.2	3.5	2.8	2.8	4.5	6.3	7.6	5.0	3.6	2.5	2.2	1.8	2.1	2.8	2.6	1.6	1.3	2.7	3.9	3.9	4.3	3.8	4.1	5.2	4.7	3.8	3.3	5.8	6.6
4.3	6.6	8.0	8.5	7.3	6.9	8.3	8.6	7.0	5.5	5.7	7.1	8.6	8.9	7.0	6.6	6.1	5.7	5.1	4.5	4.9	5.6	4.2	3.5	4.1	6.0	6.2	5.9	5.4	3.8	5.0	6.1	6.3	5.9	5.3	5.4
5.6	5.4	4.8	5.8	6.1	6.6	6.4	6.9	6.9	6.4	6.8	7.4	6.9	7.0	7.2	7.0	7.1	6.6	6.5	6.1	6.3	6.4	5.8	5.4	5.0	5.4	5.6	5.5	5.2	4.8	4.4	4.7	5.1	5.6	6.1	6.2
4.4	5.1	5.1	4.5	4.2	4.7	5.4	5.4	5.2	5.2	5.3	5.4	5.0	4.8	4.5	4.5	5.1	5.6	6.0	5.6	5.3	5.9	5.4	5.0	4.8	4.2	4.1	4.4	4.5	4.7	4.5	4.0	4.0	3.6	4.2	4.2
3.7	3.5	4.0	4.5	4.7	4.5	4.3	4.7	4.2	4.7	4.8	4.8	4.6	3.5	2.9	3.4	3.6	4.7	5.4	5.6	5.5	5.2	4.7	3.6	3.2	3.2	3.3	4.4	4.3	4.7	5.0	4.4	3.7	3.3	3.8	3.9
2.9	2.7	3.5	5.2	5.6	5.7	5.1	5.2	5.1	5.0	5.2	4.3	3.9	3.1	2.5	3.5	4.9	4.6	4.7	4.4	4.0	3.3	2.0	1.3	1.6	2.2	1.6	1.5	1.4	1.4	1.3	1.1	1.4	1.9	3.0	2.9
2.9	3.3	4.5	4.9	5.1	5.7	5.7	5.1	4.1	4.3	4.2	3.3	3.0	2.6	2.2	2.2	2.2	2.3	2.6	2.5	2.2	1.9	1.5	1.3	1.3	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.5	2.5	3.1	3.0

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations



.4	.4	.4	.3	.3	.3	.3	.3	.4	.5	.6	.5	.8	1.3	1.3	.7	.4	.3	.4	.5	.4	.5	.5	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4
.3	.3	.4	.3	.3	.4	.5	.4	.4	.5	.6	.6	1.1	1.7	1.8	1.2	.4	.5	.4	.6	.5	.4	.4	.5	.4	.5	.5	.6	.7	.6	.5	.5	.6	.4	.3	.3
.5	.5	.6	.8	.7	.6	.6	.6	.6	.4	.6	.5	.6	1.5	1.4	.6	.8	.5	.5	.6	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.6	.7	.6	.6	.5
.6	.6	.7	.5	.7	.6	.5	.5	.6	.5	.5	.5	.5	.4	.4	.4	.5	.7	.6	.6	.5	.4	.4	.4	.5	.6	.6	.7	.8	.6	.6	.6	.5	.5	.6	.5
.5	.5	.5	.5	.4	.7	.9	1.0	1.0	.8	.6	.6	.5	.5	.5	.4	.4	.8	.6	.7	.8	.8	.8	.7	.7	.9	1.1	1.0	1.0	1.0	.7	.6	.7	.5	.5	.5
.6	.5	.3	.3	.3	.5	1.0	1.0	1.1	.8	.7	.3	.4	.4	.4	.4	.4	.9	1.0	.7	.9	1.1	1.1	1.0	.8	1.8	2.2	1.9	1.2	1.0	.8	.7	.5	.6	.5	.9
.5	.4	.5	.3	.2	.3	.6	1.1	.8	.9	.9	.4	.3	.2	.2	.2	.7	1.1	.7	.9	1.2	.9	.9	1.1	.9	.9	1.9	1.2	.6	.7	.8	.5	.5	.3	.3	.4
.3	.3	.4	.3	.5	.5	.5	.7	.9	.8	.7	.8	.3	.3	.3	.5	1.0	1.4	.8	1.2	1.0	1.2	1.3	.7	.3	.7	1.2	1.1	.8	.6	.8	.5	.7	.5	.7	.4
.5	.6	.6	.6	.6	.6	.6	.7	.8	.8	1.0	.9	.7	.6	.7	.7	1.0	.8	1.1	1.1	.9	1.1	.8	.4	.4	.8	.5	.9	1.0	1.0	.9	.8	.7	.6	.5	.6
.6	.6	.5	.4	.3	.3	.3	.3	.3	.5	.9	.8	.6	.6	.6	.5	.3	.2	.4	.7	.9	1.1	.5	.4	.4	.6	.6	.8	.8	.8	1.0	.9	.8	1.1	.8	.4
.9	.7	.6	.7	.5	.4	.3	.3	.3	.4	1.4	1.2	.4	.4	.6	.3	.3	.3	.4	.8	.6	.6	.7	.4	.4	.5	.6	.4	.4	.5	.8	.8	.6	.7	.9	.8
.7	.6	.6	.6	.6	.5	.4	.4	.4	.4	.6	1.2	.6	.8	.4	.3	.3	.3	.4	.7	.6	.6	.5	.5	.5	.5	.4	.4	.4	.9	.9	.6	.5	.6	.7	.6
.5	.5	.6	.7	.5	.5	.6	.6	.6	.5	.7	.6	.8	.7	.6	.6	.6	.5	.6	.6	.8	.6	.5	.6	.6	.7	.6	.5	.5	.6	.6	.7	.6	.6	.5	.7
.6	.5	.5	.6	.6	.6	.6	.6	.6	.6	.7	.6	.5	.6	.6	.6	.6	.6	.6	.6	.6	.5	.5	.7	.6	.7	.6	.6	.6	.6	.5	.5	.7	.5	.7	.7
.5	.6	.5	.5	.5	.5	.6	.5	.5	.5	.7	.7	.5	.5	.6	.6	.6	.5	.6	.5	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6
.7	.7	.6	.6	.6	.6	.5	.5	.5	.4	.6	1.2	.7	.6	.7	.7	.6	.7	.6	.7	.6	.6	.8	1.1	.8	.7	.9	.9	1.0	.8	.9	.9	.8	.7	.6	.7
1.0	.9	.9	.9	1.1	1.2	1.1	1.1	1.3	1.4	1.3	1.3	.9	.8	.9	1.2	1.4	1.8	2.2	2.5	2.5	2.4	1.9	1.6	1.4	1.5	1.8	1.9	1.7	2.0	2.0	1.4	1.2	1.4	1.3	.9
1.0	1.0	1.2	1.1	1.0	1.0	1.3	1.7	1.8	.9	.7	.8	1.0	1.0	1.0	1.2	1.3	1.5	1.6	1.8	1.9	2.0	2.3	2.0	2.0	2.3	2.3	2.0	1.9	1.8	1.7	1.5	1.4	1.7	1.4	1.0

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). JUNE 2001
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations

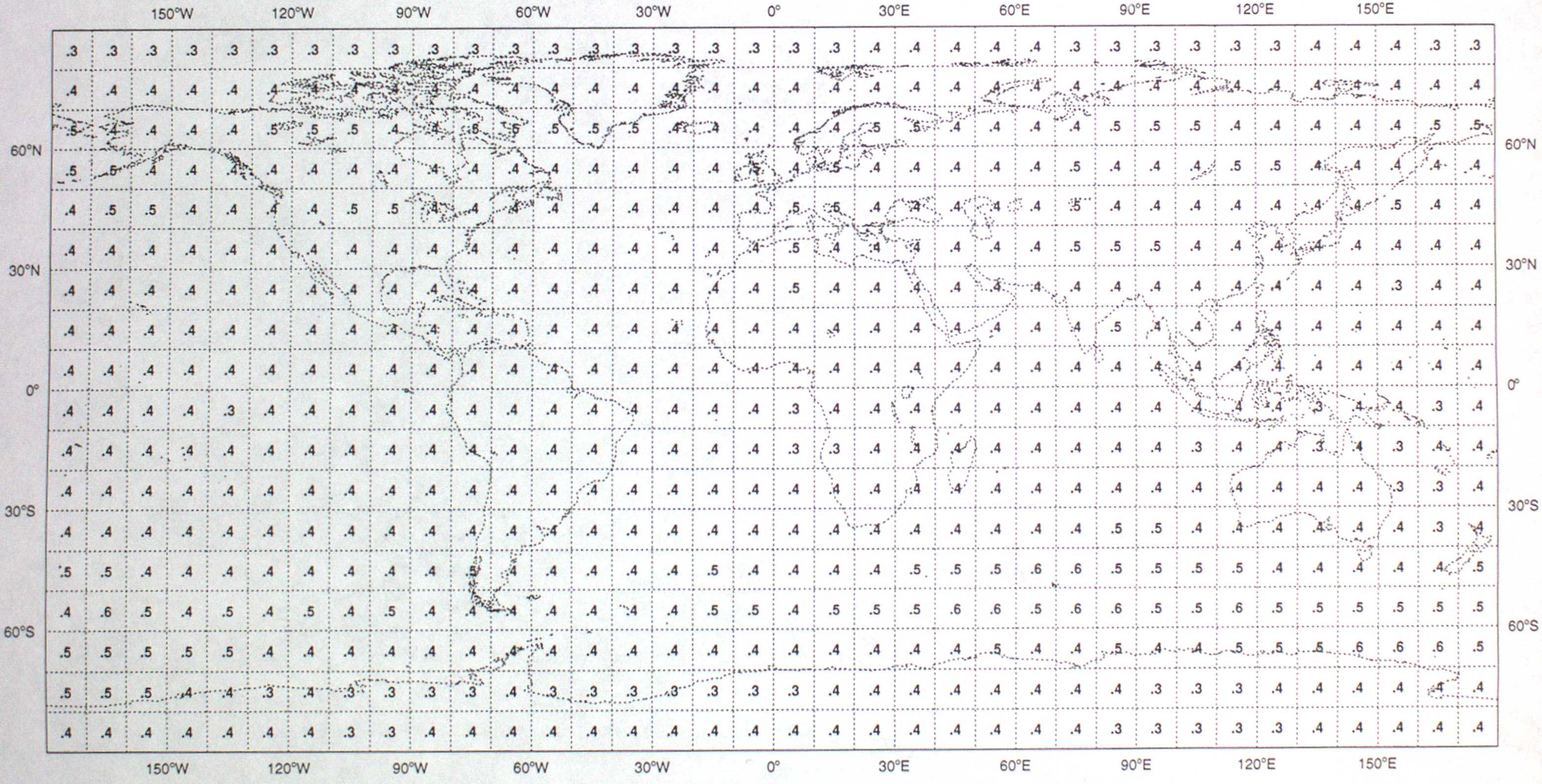
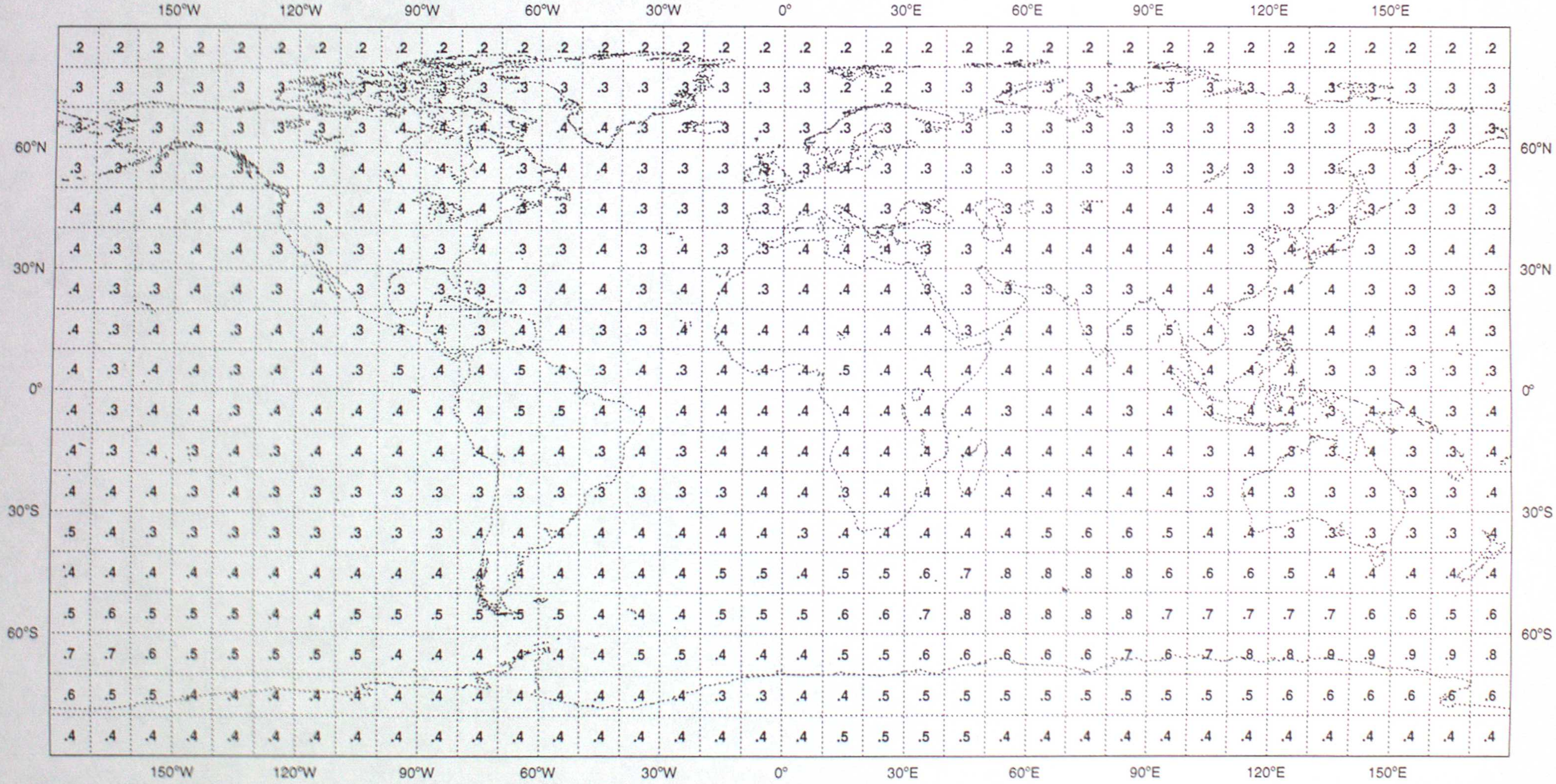

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.5 .4 .4 .4 .4 .5 .5 .5 .4 .4 .6 .5 .5 .5 .5 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .5 .5
.5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .5 .4 .4 .4 .4 .4 .5 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4
.4 .5 .5 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4 .3 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .3 .4
.5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .5 .5 .5 .6 .6 .5 .5 .5 .5 .4 .4 .4 .4 .4 .5
.4 .6 .5 .4 .5 .4 .5 .4 .5 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .5 .5 .5 .6 .6 .5 .6 .6 .5 .5 .6 .5 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .5 .4 .4 .5 .5 .5 .6 .6 .6 .5
.5 .5 .5 .4 .4 .3 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). JUNE 2001
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.3	.4	.4	.3	.3	.3	.3	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.4	.4	.4	.4	.4	.3	.3	.4	.4	.3	.4	.3	.3	.4	.3	.3	.3	.3	.4	.4	.3	.3	.4	.3	.3	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3
.4	.3	.3	.4	.4	.3	.3	.3	.4	.3	.4	.3	.3	.4	.3	.4	.3	.3	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.3	.4	.4	.3	.3	.4	.4
.4	.3	.3	.4	.4	.3	.4	.3	.3	.3	.3	.3	.4	.4	.3	.4	.4	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.4	.4	.3	.4	.4	.3	.3	.3	.3
.4	.3	.4	.4	.3	.4	.4	.3	.4	.4	.3	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.3	.5	.5	.4	.3	.4	.4	.4	.3	.4	.3
.4	.3	.4	.4	.3	.4	.4	.3	.5	.4	.4	.5	.4	.3	.4	.3	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3
.4	.3	.4	.4	.3	.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.3	.4	.3	.4	.4	.3	.4	.4	.3	.4
.4	.3	.4	.3	.4	.3	.4	.4	.4	.4	.4	.4	.4	.3	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.3	.3	.4	.3	.3	.4
.4	.4	.4	.3	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.3	.3	.3	.3	.3	.4
.5	.4	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.5	.6	.6	.5	.4	.4	.3	.3	.3	.3	.3	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.4	.5	.5	.6	.7	.8	.8	.8	.8	.6	.6	.6	.5	.4	.4	.4	.4	.4
.5	.6	.5	.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.6	.6	.7	.8	.8	.8	.8	.8	.7	.7	.7	.7	.7	.6	.6	.5	.6
.7	.7	.6	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.5	.5	.6	.6	.6	.6	.6	.7	.6	.7	.8	.8	.9	.9	.9	.9	.8
.6	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13502	22.4	-25.2	ALL	P	SUR	245	0	0	0.5	-0.3	0.5
13505	16.0	-25.5	ALL	P	SUR	102	0	0	0.5	-0.3	0.6
13506	15.8	-26.1	ALL	P	SUR	175	0	0	0.5	0.0	0.5
13507	10.4	-26.2	ALL	P	SUR	231	0	0	0.5	0.3	0.6
13509	13.3	-19.5	ALL	P	SUR	160	0	0	0.7	0.1	0.7
13510	12.9	-17.9	ALL	P	SUR	197	0	0	1.0	-0.2	1.0
21604	38.3	-77.0	ALL	P	SUR	65	65	100			
21614	38.3	-77.0	ALL	P	SUR	1	1	100			
26510	72.7	-20.0	ALL	P	SUR	99	0	0	1.0	0.7	1.2
41502	24.6	-77.7	ALL	P	SUR	120	0	0	0.9	1.3	1.5
41504	23.3	-65.6	ALL	P	SUR	213	123	58	3.8	-1.2	4.0
41505	28.1	-63.6	ALL	P	SUR	184	0	0	0.9	-2.0	2.2
41522	11.1	-40.4	ALL	P	SUR	113	0	0	0.4	0.2	0.5
41523	30.7	-59.2	ALL	P	SUR	338	0	0	0.6	0.1	0.6
41525	19.6	-39.6	ALL	P	SUR	263	0	0	0.4	0.1	0.5
41528	17.4	-46.9	ALL	P	SUR	260	0	0	0.4	0.3	0.5
41552	18.8	-37.5	ALL	P	SUR	593	0	0	0.5	-0.4	0.6
41559	15.5	-43.3	ALL	P	SUR	569	0	0	0.5	-0.1	0.5
41560	15.5	-39.7	ALL	P	SUR	570	0	0	0.5	0.0	0.5
41561	12.6	-39.4	ALL	P	SUR	543	0	0	0.5	-0.3	0.6
41562	10.9	-41.7	ALL	P	SUR	552	0	0	0.5	-0.1	0.5
41563	11.3	-30.3	ALL	P	SUR	570	0	0	0.5	-0.2	0.5
41571	39.5	-37.1	ALL	P	SUR	473	0	0	0.7	-0.2	0.7
41595	34.8	-74.2	ALL	P	SUR	530	7	1	0.7	0.5	0.8
41613	20.4	-49.2	ALL	P	SUR	174	6	3	0.5	0.5	0.7
41616	20.1	-62.4	ALL	P	SUR	425	0	0	0.4	0.6	0.7
41639	25.1	-64.3	ALL	P	SUR	214	0	0	0.5	1.5	1.6
41642	21.9	-64.9	ALL	P	SUR	278	0	0	0.5	0.3	0.6
41644	30.4	-42.2	ALL	P	SUR	344	0	0	0.5	0.1	0.5
41648	38.3	-77.0	ALL	P	SUR	10	10	100			
41649	38.3	-77.0	ALL	P	SUR	3	3	100			
41650	38.3	-77.0	ALL	P	SUR	15	15	100			
41651	38.3	-77.0	ALL	P	SUR	15	15	100			
41652	38.3	-77.0	ALL	P	SUR	8	8	100			
44513	42.4	-70.7	ALL	P	SUR	1	0	0	0.0	-1.1	1.1
44546	59.8	-23.8	ALL	P	SUR	790	0	0	0.9	-0.8	1.3
44548	52.2	-42.4	ALL	P	SUR	581	0	0	0.7	-0.5	0.8
44549	50.1	-42.5	ALL	P	SUR	669	0	0	0.7	-0.5	0.8
44550	52.0	-45.8	ALL	P	SUR	686	0	0	0.7	-0.9	1.1
44610	59.0	-19.0	ALL	P	SUR	1755	0	0	0.9	0.3	1.0
44611	44.0	-4.2	ALL	P	SUR	581	0	0	0.5	0.8	0.9
44612	37.5	-26.8	ALL	P	SUR	1003	0	0	0.6	-0.1	0.6
44613	35.1	-21.9	ALL	P	SUR	665	0	0	0.5	0.4	0.6
44616	42.9	-49.2	ALL	P	SUR	681	0	0	0.7	0.0	0.7
44620	26.5	-39.8	ALL	P	SUR	678	0	0	0.4	0.0	0.4
44621	55.2	-44.9	ALL	P	SUR	672	0	0	0.9	-0.2	0.9
44623	35.6	-21.4	ALL	P	SUR	658	0	0	0.5	0.2	0.6
44624	43.3	-42.3	ALL	P	SUR	1108	0	0	1.0	-0.2	1.0
44625	46.1	-52.2	ALL	P	SUR	1090	0	0	0.8	-0.7	1.0
44629	46.7	-40.4	ALL	P	SUR	158	0	0	0.7	-0.7	1.0
44721	39.1	-39.1	ALL	P	SUR	778	0	0	0.7	-0.2	0.7
44722	39.5	-34.6	ALL	P	SUR	983	1	0	0.6	-0.4	0.7
44725	52.0	-44.1	ALL	P	SUR	618	0	0	0.9	0.0	0.9
44729	45.8	-9.8	ALL	P	SUR	860	0	0	0.6	0.6	0.8
44761	52.4	-21.5	ALL	P	SUR	1175	0	0	0.7	-0.2	0.8
44762	45.3	-7.9	ALL	P	SUR	574	0	0	0.5	0.5	0.7
44765	37.4	-33.8	ALL	P	SUR	646	4	1	0.6	-0.1	0.6
44770	57.3	-12.9	ALL	P	SUR	159	1	1	0.5	0.1	0.5
44771	55.9	-30.9	ALL	P	SUR	610	1	0	0.7	0.0	0.7
44772	43.9	-5.4	ALL	P	SUR	615	0	0	0.7	0.4	0.9

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
44774	47.1	-20.3	ALL	P	SUR	1510	10	1	0.9	0.0	0.9
44775	39.0	-44.4	ALL	P	SUR	712	0	0	0.6	-0.2	0.6
44776	50.4	-33.0	ALL	P	SUR	651	1	0	0.7	-0.5	0.8
44778	45.7	-36.2	ALL	P	SUR	671	0	0	0.8	-0.2	0.8
44805	43.2	-69.2	ALL	P	SUR	1	0	0	0.0	-0.1	0.1
44808	40.5	-69.4	ALL	P	SUR	1	0	0	0.0	-0.3	0.3
44813	42.4	-70.7	ALL	P	SUR	2	0	0	0.5	-0.2	0.6
44825	40.3	-73.2	ALL	P	SUR	1	0	0	0.0	-0.3	0.3
45751	44.5	-79.4	ALL	P	SUR	1	0	0	0.0	1.2	1.2
48581	59.5	-59.6	ALL	P	SUR	84	0	0	5.5	0.2	5.5
56808	24.9	-80.9	ALL	P	SUR	78	78	100			
62501	38.5	-18.6	ALL	P	SUR	605	0	0	0.5	0.2	0.6
62503	35.4	-18.5	ALL	P	SUR	677	0	0	0.4	-0.4	0.6
62504	39.4	-23.4	ALL	P	SUR	822	0	0	0.5	-0.2	0.6
62505	37.5	-11.8	ALL	P	SUR	979	0	0	0.5	0.1	0.6
62507	50.1	-6.1	ALL	P	SUR	1	0	0	0.0	0.4	0.4
62510	42.2	-20.9	ALL	P	SUR	267	0	0	0.6	-0.5	0.8
62511	38.3	-21.7	ALL	P	SUR	307	0	0	0.5	-0.4	0.7
62514	57.3	-11.9	ALL	P	SUR	631	0	0	0.8	0.0	0.8
62564	35.6	-15.6	ALL	P	SUR	165	0	0	0.4	0.2	0.5
62590	53.1	-11.2	ALL	P	SUR	1	0	0	0.0	0.2	0.2
62596	63.1	-33.4	ALL	P	SUR	657	0	0	0.6	-0.3	0.7
62605	54.5	-12.6	ALL	P	SUR	1	0	0	0.0	-0.5	0.5
62701	50.6	-2.7	ALL	P	SUR	2	0	0	0.7	0.1	0.7
62705	54.9	-12.6	ALL	P	SUR	1	0	0	0.0	0.2	0.2
62706	57.0	-9.7	ALL	P	SUR	2	0	0	0.1	-0.5	0.5
62763	47.5	-8.5	ALL	P	SUR	1	0	0	0.0	1.0	1.0
62801	50.6	-2.7	ALL	P	SUR	1	0	0	0.0	0.1	0.1
65516	60.7	-35.3	ALL	P	SUR	257	0	0	0.6	-0.4	0.7
65581	58.9	-39.5	ALL	P	SUR	99	0	0	0.6	-0.6	0.8
65595	56.9	-38.1	ALL	P	SUR	1232	5	0	0.8	-0.2	0.8
65602	59.7	-27.5	ALL	P	SUR	1814	13	1	1.0	-0.3	1.1
65662	59.2	-36.7	ALL	P	SUR	1675	6	0	1.1	-0.5	1.2
65663	52.6	-39.0	ALL	P	SUR	1140	14	1	1.3	-0.6	1.4
WIND SPEED											
057611	27.7	-79.9	ALL	SPEED	SUR	1	0	0	0.0	5.6	5.6
135467	26.3	-78.5	ALL	SPEED	SUR	1	0	0	0.0	4.0	4.0
195603	26.7	-79.2	ALL	SPEED	SUR	1	0	0	0.0	0.4	0.4
385616	26.8	-79.2	ALL	SPEED	SUR	1	0	0	0.0	1.7	1.7
41523	30.7	-59.2	ALL	SPEED	SUR	1	0	0	0.0	3.5	3.5
41552	18.8	-37.5	ALL	SPEED	SUR	588	0	0	1.2	0.0	1.2
41559	15.5	-43.3	ALL	SPEED	SUR	566	0	0	1.4	0.9	1.7
41560	15.5	-39.7	ALL	SPEED	SUR	565	0	0	1.4	0.5	1.5
41561	12.6	-39.4	ALL	SPEED	SUR	536	3	1	5.1	3.7	6.3
41562	10.9	-41.7	ALL	SPEED	SUR	546	2	0	2.7	1.0	2.9
41563	11.3	-30.3	ALL	SPEED	SUR	564	0	0	1.7	0.6	1.8
41630	22.1	-65.2	ALL	SPEED	SUR	23	0	0	1.6	-0.6	1.7
41639	25.1	-64.3	ALL	SPEED	SUR	208	0	0	4.9	7.8	9.2
41642	21.9	-64.9	ALL	SPEED	SUR	268	1	0	1.9	1.3	2.3
41644	30.4	-42.2	ALL	SPEED	SUR	4	0	0	0.4	-5.0	5.0
435316	27.7	-79.8	ALL	SPEED	SUR	1	0	0	0.0	-0.5	0.5
44805	43.2	-69.2	ALL	SPEED	SUR	1	0	0	0.0	-0.1	0.1
44825	40.3	-73.2	ALL	SPEED	SUR	1	0	0	0.0	0.2	0.2
456068	26.9	-79.3	ALL	SPEED	SUR	1	0	0	0.0	3.1	3.1
62504	39.4	-23.4	ALL	SPEED	SUR	826	4	0	2.3	0.4	2.3
62506	30.7	-23.7	ALL	SPEED	SUR	27	0	0	2.4	-0.7	2.5
62507	50.1	-6.1	ALL	SPEED	SUR	1	0	0	0.0	-3.9	3.9
62552	47.6	-12.2	ALL	SPEED	SUR	439	0	0	1.4	-0.4	1.4
62555	38.7	-17.1	ALL	SPEED	SUR	4	0	0	0.5	-0.5	0.7
62556	40.4	-21.2	ALL	SPEED	SUR	494	0	0	1.5	-0.1	1.5

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
62558	47.5	-21.3	ALL	SPEED	SUR	109	0	0	1.7	-0.6	1.8
62559	47.3	-20.8	ALL	SPEED	SUR	478	0	0	1.7	-0.2	1.7
62565	41.3	-13.3	ALL	SPEED	SUR	303	0	0	1.3	-0.1	1.3
62566	42.5	-16.3	ALL	SPEED	SUR	87	0	0	1.0	-0.3	1.0
62567	39.0	-17.0	ALL	SPEED	SUR	515	0	0	1.3	-0.1	1.3
62569	39.2	-15.1	ALL	SPEED	SUR	476	0	0	1.3	0.1	1.3
62570	47.6	-21.7	ALL	SPEED	SUR	483	0	0	1.5	-0.5	1.5
62571	37.9	-14.1	ALL	SPEED	SUR	396	0	0	1.2	-0.3	1.2
62572	42.1	-20.1	ALL	SPEED	SUR	477	0	0	1.2	0.2	1.2
62590	53.1	-11.2	ALL	SPEED	SUR	1	0	0	0.0	0.5	0.5
62605	54.5	-12.6	ALL	SPEED	SUR	1	0	0	0.0	-1.7	1.7
62705	54.9	-12.6	ALL	SPEED	SUR	1	0	0	0.0	-1.2	1.2
62706	57.0	-9.7	ALL	SPEED	SUR	2	0	0	0.6	-0.3	0.7
62763	47.5	-8.5	ALL	SPEED	SUR	1	0	0	0.0	0.1	0.1
65663	52.6	-39.0	ALL	SPEED	SUR	1	0	0	0.0	1.5	1.5
WIND DIRECTION											
135467	26.3	-78.5	ALL	DIRN.	SUR	1	0	0	0.0	25.1	25.1
41552	18.8	-37.5	ALL	DIRN.	SUR	559	0	0	13.7	1.0	13.8
41559	15.5	-43.3	ALL	DIRN.	SUR	564	0	0	11.0	-4.5	11.9
41560	15.5	-39.7	ALL	DIRN.	SUR	561	0	0	11.3	14.3	18.2
41561	12.6	-39.4	ALL	DIRN.	SUR	536	3	1	11.4	-0.9	11.4
41562	10.9	-41.7	ALL	DIRN.	SUR	542	2	0	12.1	-15.5	19.7
41563	11.3	-30.3	ALL	DIRN.	SUR	345	0	0	25.4	36.1	44.2
41639	25.1	-64.3	ALL	DIRN.	SUR	67	0	0	21.1	-7.2	22.3
41642	21.9	-64.9	ALL	DIRN.	SUR	152	1	1	28.9	26.4	39.2
44805	43.2	-69.2	ALL	DIRN.	SUR	1	0	0	0.0	-10.9	10.9
62504	39.4	-23.4	ALL	DIRN.	SUR	393	4	1	20.0	1.6	20.0
62552	47.6	-12.2	ALL	DIRN.	SUR	279	0	0	14.2	-4.0	14.7
62555	38.7	-17.1	ALL	DIRN.	SUR	4	0	0	8.1	78.2	78.6
62556	40.4	-21.2	ALL	DIRN.	SUR	234	0	0	12.1	14.1	18.6
62558	47.5	-21.3	ALL	DIRN.	SUR	74	0	0	21.0	-19.9	28.9
62559	47.3	-20.8	ALL	DIRN.	SUR	346	0	0	9.9	-6.6	11.9
62565	41.3	-13.3	ALL	DIRN.	SUR	119	0	0	13.1	-4.0	13.7
62566	42.5	-16.3	ALL	DIRN.	SUR	34	0	0	7.9	-0.9	8.0
62567	39.0	-17.0	ALL	DIRN.	SUR	145	0	0	15.0	7.6	16.8
62569	39.2	-15.1	ALL	DIRN.	SUR	175	0	0	11.3	-3.6	11.9
62570	47.6	-21.7	ALL	DIRN.	SUR	354	0	0	13.3	-1.9	13.5
62571	37.9	-14.1	ALL	DIRN.	SUR	168	0	0	12.2	-2.0	12.4
62572	42.1	-20.1	ALL	DIRN.	SUR	289	0	0	15.4	0.6	15.4
62590	53.1	-11.2	ALL	DIRN.	SUR	1	0	0	0.0	-10.4	10.4
62605	54.5	-12.6	ALL	DIRN.	SUR	1	0	0	0.0	-1.8	1.8
62705	54.9	-12.6	ALL	DIRN.	SUR	1	0	0	0.0	1.4	1.4
62706	57.0	-9.7	ALL	DIRN.	SUR	2	0	0	2.9	-6.9	7.5

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures:
Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	2281	1	5	1.5	0.0	2261	0	5	0	7.6	0.8
ACA	2121	0	3	1.5	0.0	2146	0	3	0	5.6	0.7
AEA	379	1	4	1.4	0.0	373	0	6	0	8.6	0.7
AEL	230	0	7	1.5	-0.7	228	0	10	0	7.6	0.4
AFL	532	1	3	1.8	0.5	528	0	2	0	6.3	0.9
AFR	970	1	6	1.7	0.2	972	0	6	0	7.6	1.1
AIH	136	1	3	1.4	0.1	139	0	4	0	7.1	1.0
AJM	113	0	3	1.6	-0.2	116	0	2	0	6.1	1.3
ALM	69	1	7	1.4	0.2	67	0	6	0	6.7	0.1
AMM	70	0	0	1.5	0.6	70	0	1	0	6.9	1.6
AMX	134	1	2	1.5	0.4	131	1	3	0	6.7	0.4
ANZ	60	0	57	1.6	-0.5	60	0	57	0	3.7	0.5
AVA	60	0	2	1.9	0.1	63	0	3	0	8.4	0.4
AZA	585	1	7	2.4	0.6	586	0	5	0	8.1	0.7
BAF	21	10	14	1.0	-0.4	20	0	5	0	4.7	1.6
BAL	114	0	8	1.6	-0.4	114	0	12	0	10.2	1.6
BAW	847	0	7	1.8	0.0	851	0	7	0	6.1	0.9
BLX	21	0	0	1.2	-0.2	21	0	0	0	4.8	0.3
BMA	26	0	0	1.2	0.4	25	0	0	0	3.1	0.7
BSK	24	4	8	1.9	0.4	25	0	8	0	11.0	-0.6
BWA	54	0	13	3.4	2.7	57	0	9	0	13.8	2.8
CFC	38	0	3	2.3	1.2	39	0	8	0	10.0	2.3
CFG	391	0	2	1.6	-0.6	387	0	3	0	7.6	0.6
CLX	346	0	2	1.6	-0.2	353	0	3	0	6.6	0.3
CMM	485	0	3	1.5	0.1	486	0	3	0	5.2	0.7
COA	471	0	13	1.5	0.1	472	0	15	0	9.7	1.8
CRL	238	1	3	2.1	0.7	240	0	2	0	6.3	1.1
CTB	31	0	0	1.3	0.1	31	0	3	0	6.7	1.6
CUB	40	0	5	2.4	1.0	41	0	2	0	9.0	-1.0
DAL	1433	0	15	1.6	-0.4	1448	0	16	0	8.0	0.7
DLH	1358	0	6	1.6	0.1	1341	0	6	0	7.4	0.8
EDW	33	0	0	2.1	-0.3	31	0	0	0	6.4	0.9
EEZ	28	0	100	2.0	0.2	28	0	4	0	6.4	2.5
EIN	27	0	4	1.4	-0.5	27	0	4	0	4.7	0.9
ELY	87	0	2	1.5	0.0	85	0	2	0	7.0	1.2
ETH	34	0	6	1.3	-0.6	35	0	9	0	7.2	1.0
EWW	96	0	2	1.5	0.1	95	0	2	0	6.9	1.1
FDX	761	1	33	1.5	0.3	787	0	33	0	7.8	1.0
FIN	417	0	3	1.7	0.5	409	0	3	0	5.9	0.7
GAF	78	0	5	1.2	-0.5	77	0	6	0	8.0	0.9
GCO	116	2	9	1.8	0.6	117	0	100	0	16.4	5.3
GRL	31	0	0	1.5	0.3	31	0	0	0	4.3	-0.1
GTI	58	2	7	2.3	-1.6	60	0	7	0	6.3	0.3
HZM	23	0	35	6.4	6.3	24	0	17	0	11.1	-0.1
IBE	1312	0	5	1.5	0.4	1288	0	6	0	8.0	0.5
ICE	1032	0	3	1.4	0.2	1010	0	4	0	6.6	1.0
ICL	20	0	0	1.2	0.5	22	0	5	0	8.6	0.8
IWD	31	3	10	1.4	-0.5	31	0	10	0	12.5	1.0
JKK	290	1	11	1.7	-0.3	274	1	12	0	8.7	0.5
JMC	75	0	4	1.2	-0.4	75	1	7	0	7.7	0.0
KLM	1471	0	5	1.6	0.1	1467	0	6	0	6.6	0.4
LDA	34	3	3	1.1	-0.3	34	3	3	0	5.3	0.8
LDI	256	0	4	1.4	-0.6	259	0	5	0	7.1	1.0
LIB	355	1	7	1.7	0.7	363	0	7	0	7.0	0.1
LOT	193	0	3	1.8	-1.0	190	1	4	0	6.7	0.1
LTU	518	0	4	1.5	-0.2	519	0	5	0	6.7	1.1
MAS	42	0	7	1.7	0.5	43	0	12	0	9.3	0.0
MON	58	0	3	2.0	0.5	57	0	2	0	6.7	0.5
MPD	149	1	7	1.7	-0.4	147	1	8	0	9.6	1.3

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
MPH	355	1	2	1.6	-0.8	356	0	3	0	7.6	0.6
NCA	28	0	11	1.6	-0.4	24	0	4	0	7.4	-1.1
NWA	3880	0	1	1.5	0.4	3904	0	2	0	6.6	0.7
PAC	132	0	1	1.4	-0.3	134	1	4	0	7.3	-0.1
RAM	62	0	6	2.4	0.4	62	2	10	0	8.3	1.1
RCH	90	4	23	2.2	-0.6	91	1	99	0	14.7	2.7
RRR	65	3	8	1.5	0.3	64	0	9	0	9.0	1.2
RZO	131	0	2	1.5	-0.3	130	0	3	0	8.4	0.2
SAS	46	0	11	2.1	0.6	47	0	11	0	4.6	0.7
SIA	23	0	4	1.2	-0.6	25	0	4	0	5.9	0.7
SLR	71	0	6	1.6	0.6	70	1	10	0	7.9	0.4
SSV	35	0	6	2.0	0.9	35	0	6	0	6.3	0.7
SVA	55	0	15	1.6	0.6	55	0	15	0	6.7	1.5
SWR	32	0	6	1.2	-0.5	32	0	16	0	11.7	4.9
TAP	408	0	5	1.8	-0.3	400	1	6	0	8.6	1.0
TSC	226	0	3	1.6	0.3	234	0	6	0	6.6	1.2
TWA	227	0	3	1.4	0.0	217	0	5	0	7.5	1.2
UAL	1445	0	100	1.7	0.0	1468	0	100	0	5.5	0.6
UPS	924	0	36	1.6	0.2	932	0	38	0	6.9	0.5
USA	200	0	2	1.7	-0.1	160	0	3	0	7.5	1.2
VIR	444	1	3	1.5	0.0	448	0	4	0	7.7	0.8
VVR	22	0	14	3.6	1.7	22	0	9	0	4.7	-0.8
WOA	28	0	4	2.5	0.1	28	0	4	0	9.1	1.0
EU	19260	0	15	1.2	0.1	19260	0	15	0	4.3	0.4
KL	2270	0	50	2.2	1.6	2258	0	58	0	4.7	0.7
LH	910	0	13	1.5	0.9	910	0	13	0	4.3	0.5
SV	60	0	100	2.1	1.9	60	0	5	0	4.5	1.9
N	528	2	4	2.2	0.9	523	0	4	0	7.3	0.9
US ACARS	28840	8	36	1.3	0.4	28840	0	28	0	4.8	0.6

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	13	0	8.0	34.6	33.7
DBBH	12	Z	100	13	0	17.3	26.1	19.5
DBLK	12	Z	100	10	0	15.4	26.4	21.5
EHOA	12	Z	100	13	0	19.3	44.4	40.0
ELML7	00	Z	100	14	0	13.0	31.3	28.5
ELML7	12	Z	100	13	0	15.5	41.5	38.5
FNOR	00	Z	100	8	0	17.8	44.8	41.1
FNOR	12	Z	100	10	0	15.2	37.0	33.8
FNOU	00	Z	100	13	0	8.2	41.7	40.8
FNOU	12	Z	100	10	0	10.9	34.5	32.7
FNPH	00	Z	100	7	0	13.7	38.8	36.3
FNPH	12	Z	100	7	0	25.4	38.0	28.3
FNRS	00	Z	100	10	0	8.4	24.3	22.8
FNRS	12	Z	100	14	0	12.6	17.4	12.1
LDWR	00	Z	100	28	0	10.4	15.1	10.9
LDWR	12	Z	100	28	0	13.1	13.1	-0.9
OVYA2	00	Z	100	4	0	10.6	20.5	17.5
OVYA2	12	Z	100	3	1	12.1	19.3	15.0
OXYH2	00	Z	100	9	0	23.6	25.8	10.3
OXYH2	12	Z	100	6	0	13.7	16.8	9.7
SWJS	00	Z	100	3	0	8.7	24.9	23.3
SWJS	12	Z	100	2	0	7.5	25.6	24.5
V2XO	12	Z	100	1	0	0.0	50.0	50.0
ZCBP6	00	Z	100	5	0	11.2	23.8	21.0
ZCBP6	12	Z	100	7	0	11.2	37.3	35.6
03953	00	Z	100	29	0	8.3	32.8	31.8
03953	12	Z	100	29	0	11.9	26.5	23.7
04018	00	Z	100	29	0	10.7	23.9	21.4
04018	12	Z	100	27	0	11.4	19.9	16.3
04220	00	Z	100	28	0	9.7	31.3	29.8
04220	12	Z	100	28	0	6.7	26.7	25.9
04270	00	Z	100	26	0	10.8	24.9	22.5
04270	12	Z	100	27	0	12.0	23.4	20.1
04339	00	Z	100	29	0	7.0	23.1	22.0
04339	12	Z	100	28	0	7.4	24.3	23.1
04360	00	Z	100	27	0	8.2	19.3	17.5
04360	12	Z	100	28	0	8.2	17.8	15.8
08001	00	Z	100	26	0	19.5	23.9	13.9
08001	12	Z	100	29	0	18.2	21.2	10.9
08508	00	Z	100	29	0	13.7	33.2	30.2
08508	12	Z	100	28	0	14.4	29.3	25.6
08522	00	Z	100	28	0	7.3	37.3	36.5
08522	12	Z	100	28	0	6.1	31.6	31.0
08594	12	Z	100	19	0	29.2	44.8	34.0
60020	00	Z	100	23	0	15.3	38.8	35.7
60020	12	Z	100	25	0	13.7	31.7	28.6
71600	00	Z	100	29	0	10.3	18.6	15.4
71600	12	Z	100	29	0	14.2	31.1	27.7
72201	00	Z	100	28	0	31.6	40.6	25.5
72201	12	Z	100	27	0	24.9	36.9	27.2
72402	00	Z	100	28	0	17.4	65.1	62.7
72402	12	Z	100	29	0	12.6	65.3	64.0
74494	00	Z	100	26	1	7.9	24.8	23.5
74494	12	Z	100	28	0	17.4	18.1	4.7
78016	00	Z	100	24	0	14.4	46.6	44.3
78016	12	Z	100	28	0	12.7	43.3	41.4

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	15	0	10.5	17.5	13.9
DBBH	12	Z	500	13	0	10.0	10.7	3.8
DBLK	12	Z	500	11	0	11.8	12.0	2.3
EHOA	12	Z	500	14	0	8.4	19.2	17.3
ELML7	00	Z	500	20	0	8.4	10.1	5.7
ELML7	12	Z	500	18	0	10.2	16.3	12.7
FNOR	00	Z	500	10	0	8.3	10.2	5.8
FNOR	12	Z	500	11	0	6.6	12.7	10.9
FNOU	00	Z	500	13	0	7.5	11.5	8.8
FNOU	12	Z	500	11	0	6.1	11.7	10.0
FNPH	00	Z	500	9	0	6.6	8.7	5.7
FNPH	12	Z	500	8	0	6.2	8.4	5.6
FNRS	00	Z	500	11	0	7.5	7.5	0.3
FNRS	12	Z	500	14	0	9.8	9.8	0.4
LDWR	00	Z	500	28	0	7.8	9.8	6.0
LDWR	12	Z	500	28	0	10.7	10.8	-1.7
OVYA2	00	Z	500	5	0	6.0	7.4	4.4
OVYA2	12	Z	500	4	1	14.4	16.2	7.5
OXYH2	00	Z	500	9	0	15.6	15.6	-0.4
OXYH2	12	Z	500	6	0	8.5	8.5	0.3
SWJS	00	Z	500	3	0	3.7	8.2	7.3
SWJS	12	Z	500	2	0	1.0	10.0	10.0
V2XO	12	Z	500	1	0	0.0	29.0	29.0
ZCBP6	00	Z	500	5	0	10.6	12.8	7.2
ZCBP6	12	Z	500	7	0	8.6	14.4	11.6
03953	00	Z	500	29	0	6.0	13.8	12.4
03953	12	Z	500	29	0	7.0	12.8	10.7
04018	00	Z	500	29	0	7.7	14.3	12.0
04018	12	Z	500	29	0	6.4	15.5	14.1
04220	00	Z	500	28	0	8.4	12.1	8.6
04220	12	Z	500	29	0	7.5	12.4	9.9
04270	00	Z	500	27	0	10.2	15.2	11.3
04270	12	Z	500	28	0	9.8	13.2	8.8
04339	00	Z	500	29	0	6.6	17.1	15.8
04339	12	Z	500	29	0	7.4	18.8	17.3
04360	00	Z	500	28	0	8.6	12.2	8.7
04360	12	Z	500	28	0	8.6	9.8	4.6
08001	00	Z	500	28	0	11.1	11.4	2.7
08001	12	Z	500	29	0	12.3	12.3	0.7
08508	00	Z	500	29	0	7.2	7.9	3.1
08508	12	Z	500	28	0	9.0	9.8	3.8
08522	00	Z	500	28	0	6.1	7.7	4.8
08522	12	Z	500	29	0	7.0	12.6	10.5
08594	12	Z	500	23	0	8.1	9.3	-4.5
60020	00	Z	500	23	0	9.2	10.4	4.8
60020	12	Z	500	25	0	7.5	10.8	7.8
71600	00	Z	500	29	0	6.2	6.3	1.5
71600	12	Z	500	29	0	12.4	15.0	8.6
72201	00	Z	500	28	0	6.4	6.6	1.8
72201	12	Z	500	27	0	6.9	7.0	-1.4
72402	00	Z	500	28	0	7.3	13.6	11.4
72402	12	Z	500	29	0	7.0	10.6	7.9
74494	00	Z	500	26	1	5.8	6.9	3.7
74494	12	Z	500	28	0	12.5	12.8	2.6
78016	00	Z	500	25	0	14.0	21.8	16.8
78016	12	Z	500	28	0	12.2	24.5	21.3

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	13	0	0	2.5	-0.7	-0.5
DBBH	12	V	100	13	0	0	3.4	1.4	-0.6
DBLK	12	V	100	9	0	0	2.1	0.5	0.5
EHOA	12	V	100	11	0	0	5.9	-2.7	0.5
ELML7	00	V	100	15	0	0	3.8	-1.0	0.6
ELML7	12	V	100	13	0	0	5.7	0.4	0.5
FNOR	00	V	100	8	0	0	3.3	0.5	1.7
FNOR	12	V	100	10	0	0	2.5	0.6	-0.1
FNOU	00	V	100	13	0	0	4.9	0.5	-0.8
FNOU	12	V	100	11	0	0	3.2	-0.3	0.3
FNPH	00	V	100	5	0	0	6.2	-1.1	-0.2
FNPH	12	V	100	3	0	0	5.3	-3.2	-2.2
FNRS	00	V	100	9	0	0	4.0	1.7	1.1
FNRS	12	V	100	10	0	0	3.4	-0.2	0.2
LDWR	00	V	100	28	0	0	1.8	-0.5	0.2
LDWR	12	V	100	28	0	0	2.0	-0.4	0.3
OVYA2	00	V	100	4	0	0	1.8	-1.1	1.0
OVYA2	12	V	100	4	0	0	3.4	-1.8	0.1
OXYH2	00	V	100	9	0	0	2.4	-0.4	0.6
OXYH2	12	V	100	4	0	0	3.0	1.5	-0.1
SWJS	00	V	100	3	0	0	3.9	0.2	-0.7
SWJS	12	V	100	2	0	0	5.4	3.0	-1.3
V2XO	12	V	100	1	0	0	2.3	2.3	-0.1
ZCBP6	00	V	100	4	0	0	2.8	-0.4	-1.8
ZCBP6	12	V	100	5	0	0	2.7	-0.9	1.5
03953	00	V	100	29	0	0	2.6	0.4	1.0
03953	12	V	100	28	0	0	2.2	0.7	0.4
04018	00	V	100	29	0	0	2.1	0.7	0.2
04018	12	V	100	26	0	0	2.2	0.2	-0.2
04220	00	V	100	28	0	0	3.1	-0.5	0.6
04220	12	V	100	28	0	0	3.2	-0.1	0.8
04270	00	V	100	26	0	0	3.2	-0.2	-0.2
04270	12	V	100	27	0	0	3.1	0.7	0.3
04339	00	V	100	27	0	0	4.5	-1.1	-0.8
04339	12	V	100	24	0	0	3.9	-0.9	0.3
04360	00	V	100	27	0	0	2.9	0.5	-0.4
04360	12	V	100	28	0	0	2.8	-0.1	-0.4
08001	00	V	100	26	0	0	4.4	0.5	0.5
08001	12	V	100	26	0	0	3.3	1.4	0.2
08508	00	V	100	12	0	0	4.4	-0.1	1.2
08508	12	V	100	9	0	0	3.4	0.0	0.5
08522	00	V	100	26	0	0	5.0	0.4	-0.4
08522	12	V	100	25	0	0	5.1	0.1	-0.1
08594	12	V	100	19	0	100	3.9	-2.1	-0.4
60020	00	V	100	23	0	0	4.8	-1.4	0.9
60020	12	V	100	25	0	0	5.9	0.9	0.3
71600	00	V	100	29	0	0	2.6	0.1	0.3
71600	12	V	100	29	0	0	2.9	0.1	-0.2
72201	00	V	100	28	0	0	2.6	-0.3	0.5
72201	12	V	100	27	0	0	2.6	0.3	-0.3
72402	00	V	100	28	0	0	3.8	-0.8	0.0
72402	12	V	100	29	0	0	3.4	0.1	0.0
74494	00	V	100	27	0	74	2.5	0.2	-0.1
74494	12	V	100	28	0	75	3.0	0.5	0.4
78016	00	V	100	24	0	0	4.3	0.5	0.7
78016	12	V	100	28	0	0	4.4	-0.7	0.9

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: June 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS: Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

```
 WMO   OBS               NUM    NUM     %
IDENT  TIME  ELM   LEV   OBS   GROSS   REJ    RMS    UBIAS   VBIAS

DBBH    00    V    500   14      0      0     3.1    -0.5    -0.2
DBBH    12    V    500   11      0      0     3.2    -0.6     1.1
DBLK    12    V    500    9      0      0     2.9    -0.3    -0.2
EHOA    12    V    500   12      0      0     6.8    -3.4     0.8
ELML7   00    V    500   19      0      0     3.8     0.8     0.4

ELML7   12    V    500   18      0      0     3.9    -0.3    -0.9
FNOR    00    V    500    9      0      0     2.9     0.2     0.4
FNOR    12    V    500   11      0      9    13.5    -1.5    -4.1
FNOU    00    V    500   13      0      0     2.8     0.8    -0.1
FNOU    12    V    500   11      0      0     3.8     1.2    -0.3

FNPH    00    V    500    4      0      0     5.3     2.4    -1.2
FNPH    12    V    500    7      0      0     4.2    -1.3    -0.6
FNRS    00    V    500   10      0      0     5.3     0.5     2.5
FNRS    12    V    500   10      0      0     3.5     0.1     0.7
LDWR    00    V    500   28      0      0     3.4    -0.1    -0.7

LDWR    12    V    500   28      0      0     3.0    -0.4    -0.8
OVYA2   00    V    500    5      0      0     5.0     1.4     0.4
OVYA2   12    V    500    5      0      0     3.5     0.3    -0.4
OXYH2   00    V    500    9      0      0     3.6    -0.5    -0.7
OXYH2   12    V    500    5      0      0     5.3    -1.7    -1.9

SWJS    00    V    500    3      0      0     2.1    -0.7     0.2
SWJS    12    V    500    2      0      0     2.5    -1.6    -1.4
V2XO    12    V    500    1      0      0     3.4    -2.4     2.4
ZCBP6   00    V    500    5      0      0     3.4     0.0    -0.3
ZCBP6   12    V    500    5      0      0     1.9     0.9    -0.4

03953   00    V    500   29      0      0     4.5     0.1    -0.8
03953   12    V    500   27      0      0     3.2     0.9     0.5
04018   00    V    500   29      0      0     3.0    -0.7     0.5
04018   12    V    500   28      0      0     3.2    -0.6     0.2
04220   00    V    500   28      0      0     4.4    -0.4     0.6

04220   12    V    500   28      1      0     4.8     0.0     1.2
04270   00    V    500   25      0      0     4.0    -0.6     0.7
04270   12    V    500   28      0      0     4.5    -0.3    -0.5
04339   00    V    500   28      0      3     6.0    -0.7    -0.3
04339   12    V    500   29      0      6     5.7     0.6     0.4

04360   00    V    500   28      0      0     3.2    -0.3    -0.1
04360   12    V    500   28      0      0     3.2    -0.4    -0.2
08001   00    V    500   28      0      0     5.4     0.6     1.0
08001   12    V    500   27      0      0     3.9     1.1     0.1
08508   00    V    500   12      0      0     4.3    -1.8     0.9

08508   12    V    500   10      0      0     3.0    -0.3    -0.6
08522   00    V    500   28      0      0     2.9     0.0    -0.3
08522   12    V    500   29      0      0     4.0    -0.2    -0.4
08594   12    V    500   24      0    100     4.0    -0.1    -2.0
60020   00    V    500   23      0      0     3.8     0.6    -0.2

60020   12    V    500   24      0      0     3.7     0.3    -0.4
71600   00    V    500   29      0      0     2.8    -0.2    -0.7
71600   12    V    500   29      0      0     2.8     0.7     0.7
72201   00    V    500   28      0      0     2.6     0.5    -0.6
72201   12    V    500   27      0      0     2.5    -0.2    -0.8

72402   00    V    500   28      0      0     3.0    -0.9    -0.2
72402   12    V    500   29      0      0     3.6     0.3    -0.1
74494   00    V    500   27      0     74     2.8    -0.5    -0.1
74494   12    V    500   28      0     75     2.3    -0.1     0.5
78016   00    V    500   25      0      0     3.1    -1.4     0.2

78016   12    V    500   28      0      0     3.7    -0.6    -0.2
```

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45